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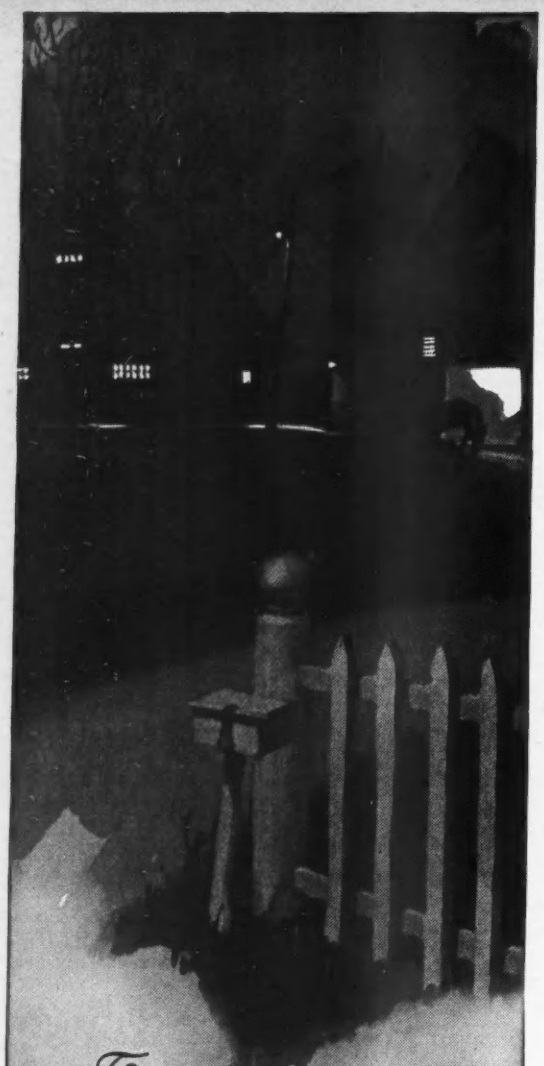

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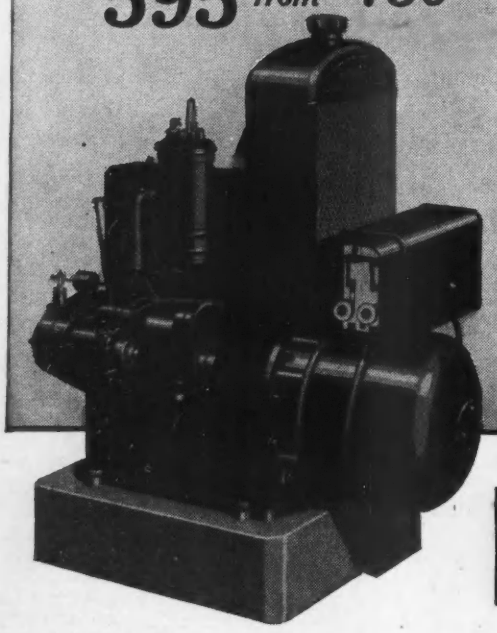

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The Future of the Raspberry Industry

There Is Need for More Attention to the Selection of Plants for Health and Vigor and Certification of Nursery Stock

By Roy E. Marshall, Mich. Agr. College

NO PHASE of the fruit industry presents as many production and marketing problems apparently beyond our practical control, as far as present knowledge goes, as the raspbery situation. Furthermore, each of these problems is of such vital interest to the small fruit grower, that we scarcely know which one is responsible for the heaviest losses.

In Michigan we have been inclined to feel that the red raspberry, more partciularly the Cuthbert, was gradually losing out along the western lake shore of the State, or in other words, must give way to varieties less valuable in many respects. One thing is certain, and that is that the Cuthbert berries now grown in western Michigan are not as large and firm as they were some years ago, in some of the counties along Lake Huron berries are being produced comparable to the old time western Michigan raspberries. We find a difference of opinion among growers as to the causes of this difference in productivity and quality.

A Better Strain

One of the most progressive of our canners is not alone in his belief that there are different strains of Cuthberts and that the eastern portion of the state has a better strain. Tests will be made by growing plants from the several sections under the same conditions to prove or disprove this contention. In view of the fact that some berry growers buy their plants from nurserymen that do a state-wide and even nation-wide business, growers on both sides of the state are undoubtedly supplied with plants from common fields, which should enable one to find the several strains in any one locality. But such does not seem to be the case.

Other growers explain the situation by maintaining that it is entirely a question of nutrition—that much of the small fruit of western Michigan is being grown on land that has produced several generations of plants and that the fertility has been lowered to such an extent that heavy fertilization is essential. Further, the plants of eastern Michigan appear to be producing in proportion to the apparent amount of fertility in the land.

If it is a question of fertility, what can be done? We all know that stable manure will bring most excellent results, but where can it be had in sufficient quantities and at a reasonable rate (including transportation) for such purposes? You may suggest commercial fertilizers but who can show conclusively that raspberries respond to commercial fertilizers in a manner comparable to our tree fruits? As far as I know, no experiment station has had results that would warrant advocating the application of any one or combination of elements. However, we are hoping that the growing of cover crops to supply humus, together with the application of commercial fertilizers, will serve to bring these plantations back to their earlier state of productivity.

May Be Due to Disease

A third explanation frequently offered is that several diseases such as yellows, crown gall, and cane blight have gained stronger foothold in the western part of the state than in the eastern part. There is a difference in the prevalence of diseases, but diseased plants are found in all these sections and it seems reasonable to believe the difference in amount of disease may be due to the greater resistance or susceptibility of the plants, caused by differences in amounts of available plant foods.

Some growers have turned their attention to the varieties of red raspberries such as the King. While it is less susceptible to some of these diseases and produces big berries, yet the berries are not as desirable for canning as the Cuthbert as they have a tendency to crumble.

It has semed at times as though we would have to rely entirely upon the black raspberries which are grown quite as extensively or more so than the reds. There have been some losses among the black caps due to cane blight, crown gall, anthracnose and yellows, but anthracnose is readily held under practical control by spraying with lime-sulphur, and the losses from the other diseases have not been as large as in the case of the reds.

Mr. Darrow of the U. S. Department of Agriculture tells us that the black raspberry is "doomed" in the eastern United States; that all the principal raspberry sections are discarding it now in favor of the less acceptable purple cane varieties such as Columbian because blue stem, cane blight, yellows, anthracnose and crown gall are making inroads into black raspberry plantations.

New York has already largely swung to the purple canes. As was mentioned above, black raspberries in Michigan seem to fare better than Cuthberts in the presence of these uncontrollable diseases, and we are not at all inclined to admit that our black raspberry industry must follow in the footsteps of other eastern sections. On the other hand we feel that we will somehow be able to contend with these troubles by exercising more care in the selection of healthy plants for use in new plantations.

Need Healthy Plants

Where can disease-free plants be had? Probably the best way to secure them is to visit plantations until apparently healthy plants, true to type, are found. To comply with nursery inspection regulations, it will usually be necessary for the raspberry plant grower to have state inspection and to pay a fee which is apt to be great enough to prevent him from selling plants unless he has large numbers to dispose of. Again, where can a field be found that is absolutely free of these several diseases? We are told that the U. S. Department of Agriculture has been carefully inspecting the territory about Cleveland and that fields may now be found there that are practically disease free.

If we get the plants from nurserymen, the chances are that they have been grown by other parties or on premises rather distant from the nurseries. Under such conditions, the buyer can form little idea concerning their health because one cannot properly determine the health of raspberry plants unless they are inspected in the mother plantation.

It can be seen readily that the chances of getting disease-free plants are small. Something must soon be done to insure the grower of getting disease-free plants. What practical means can be employed? The only suggestion of apparent merit that has come to my attention is that of certification of disease free fields of either black or red raspberries when they are found. This certification might be done by state horticultural societies or by associations of raspberry growers formed primarily for such purposes. A list of certified growers could be published and plants obtained directly from the holders of the certificates or through nurserymen certified to handle plants from the certified fields. This is merely a suggestion and criticism of the idea and further suggestions are most welcome.

Problems of almost equal importance to these production ones are found in the marketing of the berry crops. When the canneries can handle all the product of a locality at a satisfactory profit to the growers, all is well. But growers frequently find it to their advantage to place the berries in markets some 500 or more miles distant, provided they can be made to carry that far. The commercial shipping limit for the Cuthbert in Michigan is about 100 to 150 miles under present conditions. Express shipments to points 200 miles from production centers usually result in a lot of "whiskered" berries before the fruit can be put through the marketing channels. Some shippers have tried iced shipments with little better results.

Michigan growers are now seriously considering the construction of precooling plants. They have been tried, with varying success, in the Pacific Coast states and whether it will help to give us beter distribution in the middle-western and eastern states remains to be seen; but we believe they will, provided the growers are willing to handle the berries much more carefully than in the past and are willing to submit to the necessary rigid inspection to determine whether the fruit is fit for precooling and subsequent shipment or is only fit for the cannery.

I am very optimistic regarding the future of the small fruit industry, provided we get disease-free plants for planting on fields that have not grown berries for several years; then keep the plants in a good state of vigor through spraying, fertilization and cultivation, and then provide wider distribution for berries that have passed a satisfactory inspection.

It Is Probable Disease Free Plants Will Reduce Much of the Present Difficulties

Golden Opportunity for Apple Growers

Plant more Commercial Apple Orchards and Reap the Rewards of the Future—Bright Prospects Ahead

By E. H. Favor, Managing Editor

THE commercial possibilities of apples is brighter and has more of the golden opportunity in it than has existed at any time in history. The home orchard is passing, and with its demise, more potential customers are afforded the specialist in apple growing who produces fruit for sale. In fact, if apple growing continues to pass more and more into the hands of commercial growers, as has occurred during the past ten years, the non-fruit growing class of farmers constitute a market for apples second only to residents of cities, and that there should be little need to look toward foreign markets. Indeed, millions of dollars undoubtedly accrue to those commercial apple growers and marketing agencies that will now develop their trade among farmers whose home orchards have died out.

Some highlights on the situation are cast by the recent census report, which shows that the number of bearing apple trees in the United States was 23.8 percent less in 1919 than in 1909, and that the number of trees not yet of bearing age was 45 percent less than in the previous census year. Since the greater proportion of this loss is in the corn belt and general farming states where a home orchard formerly existed on every farm, it is safe to conclude that the decrease in number of trees has taken place through the removal of the farm orchard. It is rare now to find an orchard on a general farm. On the other hand, it is equally rare to find a commercial orchard of mature trees that has been abandoned or is to be pulled out. The commercial orchard is being given good care, as it is making a substantial profit for its owner, and the profit is increasing as the trees advance in age and productiveness.

Ten Year Averages

A close observation of the government crop reports for apples shows that if the crops for all states are averaged for ten year periods, each period for the past thirty years will show a marked increase over the ten years immediately preceding. In view of this, the great loss of apple trees that has occurred during the past ten years can mean only that the greatest share of the loss has fallen to the home orchard. It has gone into the discard, and the chief production has been in commercial orchards, and those few home orchards that receive adequate care.

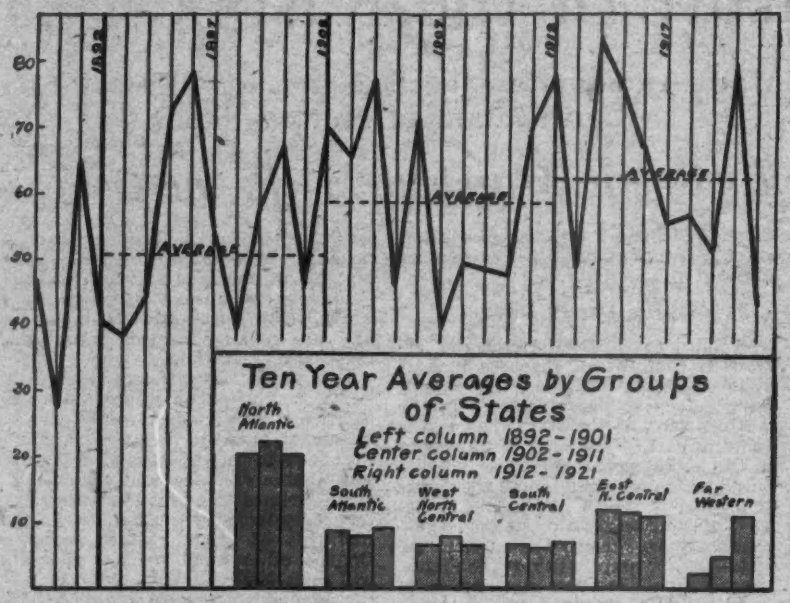
When ten year averages are made by groups of states, it is to be observed that there has been a steady decline in the west north central group, which includes Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska and Kansas. With the exception of the Dakotas, all of this territory at one time was dotted with home orchards. Every farm had its own orchard. The farm orchard of Missouri are largely responsible for that state having more than 14 million apple trees in 1909. The loss of apple trees in this territory, while large, does not show so noticibly when measures in production averages for ten year periods, undoubtedly because the commercial districts in the Ozarks of Missouri and along the Missouri river hold up the total figures.

More Apples in South

Again in the south central group of states, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma and Texas, there has been an increase in the average production for the past ten years over the preceeding decade, but with a yield which equals the average of the 1892-1901 period. This means no appreciable gain in thirty years, and the district undoubtedly holds its own through the improved methods being practiced in the commercial sections within its territory.

New York long has been the "apple bin" of the United States, and along with the New England states, New Jersey and Pennsylvania, has produced the greater share of the bulk of the apples grown in this country. This group of states, however, shows a decrease in production during the past ten years, due no doubt very largely to the great number of farm orchards that have been permitted to die through lack of intelligent care.

The situation in the South Atlantic states—Delaware, Maryland, Virginia, West Virginia, North Carolina, South Carolina and Georgia, however, shows a very noticable increase in the average production for the past ten years over the preceding period. This region is conspicuous also for showing almost no decrease in the number of apple trees in bearing, and but a slight decrease in the number of non-bearing trees. It has been stated by some observers that this region is destined to eventually take the place of the North Atlantic states in volume of apples grown. Great progress has been made in this South Atlantic territory in the planting of new apples during the past ten years, and this planting has been more largely done in commercial orchards and districts than in any other part of the United States.



The Ups and Downs of the Apple Crop From 1899 to 1921

The heavy black line shows the annual fluctuations, as represented by the figures in the left-hand column in thousands of barrels. The horizontal dotted lines show the average production in the United States by ten-year periods. The lower, shaded columns show the same averages by groups of states.

Grain in Northwest

The Pacific Northwest, of course shows a very decided increase in apple production during the past thirty years, when yields are averaged by ten year periods. But in view of the almost total lack of new plantings in this territory within recent years, the question arises, will the Northwest hold its own? Time alone can tell. But in view of the small number of trees to come into bearing during the next decade, any increase will be due very largely to the increased yields of trees now in orchards. Certainly the increase cannot be so marked as has taken place in the past ten, twenty or thirty years.

With more than 40 million fewer bearing trees throughout the corn belt, with 23.8 percent fewer bearing apple trees in the entire United States, and 45 percent fewer non-bearing trees than existed ten years ago, it would appear that the outlook for the commercial apple grower is becoming brighter each year. This is especially true if marketing efforts are turned in the direction of the large number of farmers who do not grow apples. The possible volume of fruit that can be utilized by these farmers is very large, larger in fact than exists among an equal number of city people. And why should not their trade be sought? Who will answer? What marketing agency will develop the apple market among the general farmers of the corn belt who have permitted their farm orchards to die out?

Apples Are Money Makers

The apple is the great staple fruit. It is the fruit of the millions as well as of the millionaire. Next to the orange, it is the one fruit grown within the United States that has a year around market. It is used in more ways than all other fruits combined, not only in cookery, but in its number of products and by-products. Apples have made more money for more growers than has any other one fruit, and commercial apple growers now have a greater opportunity for expanding their trade right here at home than has ever existed before.

There is a temptation to look to foreign lands as a market place for our apple crops. But why not look around home a little more closely? Green fields lend enchantment, but frequently the gold lies under foot. The home orchard rapidly is passing, far too rapidly in fact for the welfare of the farm children of today. But unfortunate though that may be, it should serve all the more as an incentive to increase the acreage of commercial apple orchards and to develop the farm markets within the borders of the United States.

Look Out for Rabbits

WITH the approach of winter, it is imperative that immediate steps be taken to protect young fruit trees from being damaged by rodent pests of various kinds, such as cotton tail rabbits, meadow and pine mice, wood chucks, jack rabbits, gophers, etc. All of these pests begin their destructive work of nibbling the bark or roots of young fruit trees, and sometimes of old trees, as soon as green vegetation has been killed by frost. Some of them gnaw the bark from the tree trunks above ground, while others confine their depredations to the roots.

The cotton tail rabbit is the great pest in eastern states, while it is the jack rabbit in the far west. Either one may completely girdle a young fruit tree in a very few minutes, and the only effective means of protecting the tree is to kill the rabbit or wrap the tree. A shot gun properly used can do very effective work in ridding an orchard of the rabbit pest, and at the same time afford some lively fun for the hunter. A less exciting form of protection is to wrap the trunk of the tree with something the rabbit will not, or cannot eat. Woven wire or wooden veneer protectors put around the trunks of the trees in the fall serve to keep the rabbits away. Unless the snow gets deep enough to enable the rabbit to reach above the protector, there will be no damage to the wrapped trees. Where the snow does get deep enough, however, rabbits may nibble even the branches of the trees.

Under such circumstances, recourse should be had to a good shot gun, traps or poison. The trees may be washed or sprayed with some of the commercial sulphur spray materials, or whitewash. Even rubbing the trunks with rabbit meat or a piece of fat pork will keep the rabbits away, as they abhor the odor of meat.

Where meadow mice abound, the wrappers put about the trees should be shoved down into the soil for a couple of inches. This will protect the trees from this pest quite well, as the meadow mice confine their work to the trunks of the trees. The pine mice, on the other hand, work on the roots, even far out from the tree trunk. Here it is necessary to resort to poison for the control. The U. S. Department of Agriculture recommends poisoning with strychnine, mixing in the proportion of one ounce of powdered strychnine (alkaloid) with one ounce of bicarbonate of soda and an eighth ounce of saccharine. This quantity is sufficient to treat fifty pounds of crushed wheat or forty pounds of crushed oats. The powder should be slowly sifted over the grain in a tub, and mixed so that the poison is evenly distributed.

The poisoned grain then is distributed through the orchard, placing bits of it in the runways of the mice. The bait must be placed in the runways of the mice. This same poisoned bait is effective in rabbit control, but usually it is better to mix the poison with a heaping tablespoon of laundry starch dissolved in a quart of boiling water. This will stick the poison to the grain and make it less liable to be washed off.

All young fruit trees should be given protection immediately against rodent injury. A little work now may save a great deal of work and expense next spring in replanting or bridge grafting the damaged trees.

Chemical analysis of soils are valuable mainly to assist in conducting investigations of a scientific character, and are of little value as a means of deciding what fertilizer should be applied.

Some Fruit Marketing Lessons

In the Northwest, Unusual Conditions Have Brought About Some Unusual Problems—Co-operation has been the Salvation

By C. F. Lewis, Associate Editor

THE season of 1921 is perhaps without precedent as regards the development of fruit marketing in a season such as this. That fruit growers would meet with unusual problems of marketing under such conditions, seems strange and perhaps at first glance, hard to understand.

Most of the problems confronting the marketers of fruit this season, however, were inherited from the season of 1920. The opening of the season of 1921 found the canneries in bad condition. ne of them were bankrupt, many were in receivers' hands, others were not in position to buy products. This was due to the fact that in 1920 extremely high prices were paid for canning products of all classes, for labels, for packages, and for sugar.

With this came the collapse of the canned goods market and cancellation of orders, which practically bankrupted the canning industry. The canneries were not in position to handle their share of the products this past year. The situation in California early in the season was such that the growers determined to ship their fruit east. This was done in the case of cherries with very satisfactory results. All the growers in the Northwest followed suit and had a similar experience in handling their cherry crop, obtaining on the whole at least twice as much by shipping their fruit fresh as they would have if they had attempted to market it at home.

The growers of the Pacific Coast attempted to duplicate with the Bartlett pear, what had been possible with berries and cherries but were not able to accomplish the same result. The general trend of the Bartlett pear market is as follows: very high prices are obtained from the early shipments from California, Texas, and Oregon. By the time the peak of the load is reached there is always a slump in prices later followed by recovery at the end of the season.

The collapse of the Bartlett pear market this year was seized on by the fruit buyers as a basis for hammering down the price on apples. Early in the summer there was talk of pretty good prices, but the buyers were looking for some opportunity to make up their losses of last year and they have tried to couple two points, namely the fact that Bartlett pears collapsed on the market, and the fact that a great many people were out of work.

It has been a rather peculiar proposition, that with the crop of apples which the Northwest has to offer to the trade, that buying has been almost from hand to mouth. The best argument to hold out on apples at this end is that the pear market finally recovered, that the fall market for pears on the whole, and for the winter varieties has been very good, and that the early varieties of apples are selling.

The salvation of the Northwest apple growers this year has been the organized bodies such as the Hood River Apple Growers, the Big Y association, and the Horticultural Union of Yakima. The Wenatchee District Co-operative Association, the Skookum Packers, and the Oregon Growers Co-operative Association. Such concerns have stood firmly in quoting out apples only when they were ready to roll, making as many f. o. b. sales as possible, and not worrying very much about varieties that were still growing on the trees.

If it had not been for the backbone which the organized growers here have shown, the market would have collapsed and the growers would have faced the situation of having red ink sales. Not only have the big associations stood firm for maintaining their prices and distributing and pushing the tonnage into new markets, but they took the initiative in trying to put across a campaign to advertise the Northwest boxed apple, and get 1 cent a box set aside for such advertising.

Practically all the organized bodies were willing to do this, but a few of the independents were not. The independents side stepped the issue and tried to show that the grower should bear the entire expense of such a movement. The result is there is no campaign for advertising boxed apples this year, a year when we need it very badly.

The Northwest apple growers are beginning to realize that ultimately we must advertise our product. The big co-operative bodies are beginning to realize that there are many things which cannot be accomplished here in the Northwest except when we all pull together. The independent growers also are realizing this very rapidly and hundreds of them are hurrying to the banners of the organized growers.

Tractors Give Best Service in Orchard Work

Some of the Reasons for This as Gathered from Fruit Growers and Tractor Salesmen in Every State

By S. W. Ray, Ohio

FROM the peach orchards of New Jersey, the apple orchards of New York, the citrus groves of Florida, the cherry orchards of Wisconsin, the pear and prune orchards of Washington, and the walnut groves of California, comes indisputable evidence of the fact that tractors are rapidly replacing horses in orchard work. In fact, there is no other class of farming in which the tractor is so nearly universally used, or in which it so completely displaces horses.

The reasons for this can be most clearly understood by pointing out in some detail the advantages of the tractor over the horse, as outlined in reports from tractor salesmen in these different sections, and in letters from practical orchardists throughout the country. The following summary is made with the hope that it may be of aid in carrying the message of power farming to orchardists everywhere.

1. Horses are not powerful enough to draw implements suited to the best orchard culture. If more horses are used the outfit becomes unwieldy and impossible to handle around trees.

The ample power provided by the tractor permits a much better quality of cultivation. Better plowing is done, particularly where there is a heavy growth of cover crop to turn under, or where it is desired to plow close to the trees. Disk harrows can be weighted and set to secure the depth and pulverization demanded for good work, particularly where it is desired to disk under a cover crop instead of plowing it. Spring tooth harrows may be set deep to tear up the soil. Subsoilers may be used to break up the hardpan formed by the plow sole.

A California walnut grower claims that the tractor increased the crop on fourteen acres to the extent of $5,000 in one year, because of the deeper cultivation permitted.

2. Horses are too slow to get the work done at the proper time.

The speed of the tractor, coupled with its ability to draw large implements, remedies this very vital factor. Oftentimes this makes cultivation possible where otherwise it could not be done at all, and makes the difference between a good crop and a poor one. Getting spring cultivation done early and quickly is a big item in the citrus groves of California.

3. Horses are large and teams are unwieldy around trees.

The tractor is more easily handled around under and close to the trees, making it possible to get implements close enough to the base of the trees to do most of the work formerly done by hand.

4. Horses cause a great deal of damage to trees, both by brushing against limbs, and by scraping the traces and single trees against the trunks of the trees.

Tractors, if of the proper type, get in under the low-hanging limbs without injury to the fruit spurs, and, because of their narrowness, can put the implements close to the trunks without danger of themselves coming in contact with the trees.

5. Horses require feed the year round. Since orchard culture requires power only about five or six months of the year in most sections, there is a long idle period during which horses produce nothing, yet have to be fed and cared for. Commercial orchardists grow very little horse feed. Grain must be bought. This makes expenses high.

The tractor is, of course, free from this objection. When not in use it can be stored away in a small shed and practically forgotten.

6. Horses suffer greatly from the heat when working at cultivation during the summer months. This is particularly true in level orchards where the trees are of bearing age because here the breeze can not penetrate.

An Illinois apple grower claims that his tractor paid for itself the first year because it made possible cultivation during the hot month of July.

7. Horses have severe limitations when it comes to operating the spraying outfit.

Tractors make possible the spraying of hundreds of additional trees every day. This is because a larger sprayer may be drawn, and because more speed can be made in going to and from the filling station. Also, the steadiness of the tractor while spraying is being done from the spraying tower permits greater safety, comfort and efficiency for the operator.

An apple grower in Southeastern Iowa claims that the tractor makes it possible to easily apply the first spring spray (bud spray) when the ground is often so soft that horses mire down or can not pull the sprayer at all.

A Wisconsin cherry grower claims that the tractor saved his orchard from destruction, by making it possible to control the "shot-hole" fungus through more timely spraying and cultivation.

8. Tractors can operate quite successfully on the rough hilly land so often found in orchards, where horses find it difficult to pull any load at all.

A cherry orchardist near Sturgeon Bay bought a tractor when he was shown that it would make it possible for him to cultivate some of the ravines in his orchard which he had formerly left in sod.

9. In vineyards frequent and thorough cultivation, and timely and thorough spraying are the factors of utmost importance. Only tractors insure success here. It is because the wine grape growers of France recognize this fact that they are making all their new plantings with sufficient width between the rows to admit a small tractor.

10. In the cranberry marshes of New Jersey tractors have proved to be a great boon, because they make it easy to clear the land, and also make it possible to cultivate the marshes.

11. The tractor furnishes belt power often needed in the orchard, such as for pumping water, running the cider mill, operating the fruit grader outfit, etc. Recent experiments have shown the practicability of using the tractor belt power for operating the pump of the spraying outfit while the tractor is being drawn by the tractor.

For all of these reasons tractors are coming to be the standard power unit in commercial orcharding sections. The horses' day is past for this work. The only question now remaining is that of selecting the tractor best suited to the needs of the section.

The Speed and Power of the Tractor Makes it Possible to Draw Large Implements

With Our Editors

What Do You Want to Know?

WITH subscribers scattered all over the United States and producing in a commercial way some twenty-five or thirty different kinds of fruits, it is an editorial problem of no small degree to select for each issue of AMERICAN FRUIT GROWER those articles that will be of most general interest. There are many things that each subscriber is particularly interested in, but which for one reason or another gets little or no attention in print. But to cover these particular points, to supply information on any phase of fruit growing not touched by articles in recent issues, AMERICAN FRUIT GROWER maintains a correspondence service that will provide the desired information direct by letter.

This service is free to subscribers. We want you to use it. We realize the limitations placed upon our reading columns, and urge that all subscribers make full use of the facilities offered through our correspondence service. No matter what you want to know about any phase of fruit growing, write to the Editorial Department of AMERICAN FRUIT GROWER for it. Your letter will be answered cheerfully and the information supplied as fully as possible. What do you want to know?

Among Ozark Fruit Growers

A SERIES of meetings among fruit growers of the Ozard region in northwestern Arkansas and southwestern Missouri is to be held during the next few weeks for the consideration of problems of large importance. Through the shortage of the fruit crop in that section this season, new problems have come up, which are to be threshed out. The Ozark region is on the up grade in fruit growing, and gives of promise of cutting a bigger figure in the fruit industry of this country than it ever has before.

The Ozark region long has been noted for the splendid manner in which the strawberry growers have co-operated. With the increasing importance of the apple and peach crops, and the impetus that is being given to grape growing through the establishment of a large grape juice factory, new marketing problems are being confronted. It is beginning to appear that a co-operative organization of broader scope is imperative, and along with it a series of packing houses in which the fruits can be packed according to standard grades and in the most up to date manner. Fruit growers elsewhere should keep their eyes on the Ozark region.

"Had Your Iron Today?"

SOME three months ago there was introduced into the markets by the California Associated Raisin Company a little red package of Thompson Seedless raisins to retail at a nickel. Its introduction was backed up with a forceful advertising campaign announcing the new package and featuring the slogan "Had Your Iron Today? Eat More Raisins." The novelty of the idea of eating raisins between meals as a sort of a confection, as well as a most nourishing food, instantly made a "hit" and the popularity of the little package has reached even into the senate chamber. It is reported that a messenger for Vice-President Coolidge places one of the little red packages each day on the Vice-President's desk in the senate chamber just before that body convenes at noon.

That the habit of eating raisins between meals, or for the noonday lunch, is spreading is indicated by the fact that during the month of September the raisin company sold over 300,000,000 of the little packages. This is in the neighborhood of 14,000 tons, and before the close of the year the 20,000 tons which the company expected to sell in this manner will have been cleeaned up.

There is an object lesson here for the growers and associations handling other fruits, as the "Little Sun-Maids" are credited with being the quickest merchandising success that has been devised. But it did not come without work. It has not resulted from pure luck, but has taken work, hard work on the part of many brainy men skilled in merchandising. Other dried fruits have been marketed in small packages, particularly dates and figs. Many fruits have been advertised extensively, but have not captured the market in the spirited way the "Little Sun-Maids" have done the job. Fruit growers everywhere can well afford to give attention to the success of this merchandising venture and from it develop plans that may be applied to their fruits.

Spray Right for 1922 Crop

SOME of the middle-western experiment stations are pointing out to fruit growers the possibility of the season of 1922 being a critical one for orchard owners. The reason for this is that the short crop of orchard fruits this year has caused many growers to give less attention to spraying than usual, and in that way have permitted several very expensive diseases to go unchecked. This has been the case especially with apple blotch, which has spread rapidly and established many new cankers, from which the crop next year will be infected. Black rot, bitter rot, and the ever present apple scab all have been permitted to increase where the spraying program was not regularly followed. The effect of this is noticeable early this fall in the advanced stage of defoliation in many apple orchards.

Very thorough and energetic spraying will be required in every orchard next year to thoroughly safeguard the fruit against the infection that is certain to occur. In fact, some of this spraying can be done now, in the way of an application of dormant spray as a general clean up and tonic for the orchard. Then, at the earliest possible date next spring, the regular spraying program should be begun, and followed more closely, more vigorously and more intelligently than ever before. In other words, spray right for the 1922 crop. The crop will be a good one, for with the vacation the trees have had this year, unless the defoliation by scab has been excessively severe, the 1922 apple crop should make up in volume and quality for the failure that occurred this year.

A Great Opportunity

THE Fruit Committee, appointed by President Howard of the American Farm Bureau Federation met in Atlanta, Georgia, November 19th to organize itself for action. A great opportunity lays before this committee. There are some serious problems affecting the fruit industry of the United States that need to be solved, standardized, co-ordinated or revised in order that full prosperity may prevail. To remedy these conditions, or even to propose a remedy for many of them will be a long step forward.

The Fruit Committee, coming as they do, from many parts of the country, and whose individual interests are centered on a large number of fruits, may be trusted to view all problems from a broad, unselfish viewpoint. That is an important item. Fruit growers are unlike any other class whose activities are being considered by committees appointed by the American Farm Bureau Federation. Not only are their crops of widely different character, but in many instances affords the strongest kind of competition in the markets.

It is safe to assume that early in the conferences of the Fruit Committee certain problems will come to the front from within the experience of individual members of the committee. But there are, no doubt, several problems of nation wide importance that may escape observation by the committee unless proposed by outsiders who have the welfare of the fruit industry at heart. The editors of American Fruit Grower will be glad to pass along to the Fruit Committee any suggestions that occur to our readers. Have you something in mind in the way of a problem of outstanding importance that you think should be brought to the attention of the Fruit Committee? If so, send it to us and we will see that it is presented to the committee.

A Better Packing Plan

IN COMMENTING on the fruit packing methods that prevail, W. L. Mason of Oregon is quoted as saying "We must abolish our present custom of packing fruit in individual packing houses and adopt community methods wherever possible. This will not only insure a better and more uniform pack, but in most cases will reduce the overhead harvesting expense to the grower. If co-operative selling agencies are feasible, why not co-operative packing plants?"

The community or central co-operative packing plant idea is taking hold of fruit growers in every part of the United States in a vigorous fashion. This is particularly true in the important apple and citrus districts where co-operative selling organizations are in existence. Here central packing houses have been found necessary in order to obtain a greater uniformity in the standard of grading. While there may be some question as to the lower cost of packing in central packing houses, there is no disputing the fact that the packing done in a central house packing may be much more in accordance with a definite standard of grading than usually prevails otherwise. That is an important item now in the merchandising of a fruit crop.

Several apple growing states have adopted laws regulating the grading and branding of their fruits, but in practically no case is the law strictly observed. There are various reasons for this, but in the great majority of instances, few growers will put the same interpretation on the definition for any one particular grade. Few will agree within several percent as to the tolerance allowed for defects, etc. But in a central packing house, this is much more easily controlled, as rigid standards can be determined, and with the packing done entirely by disinterested persons, the standards can be more closely followed.

MUCH NEWS IN LITTLE SPACE

New York apple growers are experimenting with waterproof fiber boxes as containers. Three cars of Baldwins in these boxes sold for $2.25 a box.

Vinegar is being made from oranges in a commercial way in California. It is said to be especially fine in salads.

The tropical hurricane which swept Florida on October 25th caused relatively small damage to the citrus crop of the state as a whole. Groves in Pinellas and Hillsboro counties suffered most.

The Kentucky Horticultural Society is endeavoring to arouse more interest in orcharding, and is seeking an appropriation from the state legislature to aid in the work.

J. G. Carlisle succeeds B. J. Christian as general manager of the Georgia Fruit Exchange.

After investigating the strawberry industry around Dayton, Tenn., and talking with growers who are making from $500 to $800 an acre a year from strawberries, a number of residents of Butts county, Georgia, have decided to grow strawberries.

A very interesting bulletin on grape growing, by F. W. Faurot, has just been issued by the Missouri Fruit Experiment Station, Mountain Grove, Mo.

As high as $110 a ton was paid this season for Zinfandel grapes grown in northern California.

A revival in strawberry growing has hit Madison county, Mississippi, and several hundred acres will again come into production next spring. That county at one time was an important strawberry center.

Since 1919, there have been planted in California 63,200 acres to Thompson Seedless grape. It is estimated that the present acreage of this variety will in 1924-25 produce a crop of 132,027 tons.

Because of the difficulty of getting experienced apple packers, the growers of Spokane, Wash., are insisting that apple packing be taught in the public schools.

At Monett, Mo., plans are under way for the erection of a dehydration plant to cost $50,000, and to be ready for operation next year.

The Missouri Experiment Station does not recommend the everbearing strawberry for general commercial planting, but considers the varieties Superb and Progressive as satisfactory for the home garden.

At Pen Yan, N. Y., Concord grapes brought as high as $150 a ton this year, and Catawba's brought $130.

On October 17th there arrived on New York markets the first straight carload of strawberries direct from California. The variety was Nick Ohmer, and reached New York the fifth morning after it started rolling.

Most of the 1,200 acres of strawberries at Castleberry, Ala., are Klondikes. That berry proving to be the best moneymaker.

The Eclipse grape is gaining in popularity in Ohio, being regarded as superior to Concord.

Both the barrel and the bushel basket have invaded the boxed apple sections of the Northwest this year and are proving more satisfactory than was believed to be possible.

The New York Experiment Station has found that fall spraying for peach leaf curl is more effective than spring applications.

The banana growers of Florida have just organized an association for mutual benefit. W. E. Bolles, Oldsmar, Fla., is secretary.

The largest single fig orchard in the world is the J. C. Forkner Fig Gardens, Fresno, Calif. It contains 18,000 acres.

Grape growing is being promoted in the Mesilla valley of New Mexico. Several farmers are planting from one to ten acres this fall.

The commercial cranberry crop is produced in Massachusetts, New Jersey and Wisconsin.

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50-87

Orchard Problems and their Solution

by Paul C. Stark
Associate Editor

Stimulation of Growth

Is it possible to stimulate an apple tree too much during the early period of its life? Or is that cultural treatment best which will cause it to attain greatest size, growth and vigor in the shortest time?—R. W. S., Virginia.

IT IS possible to stimulate an apple tree too much during the early period of its life by too much cultivation and fertilization. Particular care should be taken to prevent stimulation of growth late in the summer because of danger from early freezes. Nitrate of soda applied in early spring becomes quickly available to the tree and stimulates early growth but not late growth. After a tree becomes four or five years of age it is particularly important to not overstimulate growth by fertilizers and cultivation. In order to get the tree in good condition to bear crops, the proper balance of the different elements must be secured. For this reason, too vigorous growth must be guarded against when trees are getting old enough to bear. It is a good plan to push the growth of the trees for the first three or four years, applying fertilizer and using cultivation that will cause growth early in the season and then check the growth in late summer.

Value of Young Orchards

I am interested in an orchard of about 300 acres containing about 15,000 apple trees. The first setting is about seven years of age and the second setting about six years of age. The apples are all winter varieties. We have come to the point when it is going to take lots of money to equip ourselves and all the company are like myself, financially, living on a small salary. What I am writing you for is to ask if you can "put us next" to the proper course to pursue to secure a buyer.—H. L. V., Tennessee.

IF YOU find yourself absolutely unable to carry forward the work on your orchards you should have very little trouble in finding a buyer. Small advertisements in the AMERICAN FRUIT GROWER will doubtless put you in touch with someone who would be anxious to get hold of an orchard of your description.

Your trees are right at an age where they are ready to bear profitable crops and you will find that the equipment necessary for this young orchard will be less than you might suppose. My advice would be to use every effort to hold on to that orchard and take good care of it. In a few years you will find it is worth a big fortune to you and your partners. The 1920 government census shows that there has been a tremendous falling off of the number of apple and peach trees, both those of bearing age and those still too young to bear. In addition to this big loss in number of trees, the demand for fruit and the population in the United States have both greatly increased. The far-seeing man who takes care of his orchard and is willing to work will make a fortune during the coming generation and I personally doubt if the loss in trees will be made up in the next thirty years. I have studied the problem very carefully and have visited all the leading orchard regions of the country and I feel so sure that I am right that I am putting my own money in young orchards and planting more as fast as I can. Think this matter over carefully before you definitely decide to sell.

Pruning Black-Cap Raspberries

I wish you would give us some information in regard to trimming black-cap raspberries. We have only the Cumberland. We have some several years old, and some three years next spring and some a year next spring. After fruit was picked this year we cut out all the old canes and cut back the rest, but since these rains the new sprouts have grown several feet long. Would you cut them any more this fall or would you advise cutting them in the spring.—C. A. C., Indiana.

IMMEDIATELY after the fruit has been picked, all of the bearing canes should be removed and all young canes should be pinched at the height of 24 to 30 inches, allowing all laterals to grow until the following spring when about one-third to one-half the growth of the laterals should be removed. Some follow the system of wire trellises to hold the canes in an upright position but rows planted hedge-row style do not require this extra work.

Peach Tree Borers

I have a peach tree that has a pale yellowish color. I dug the ground loose around the tree and found a lot of gum about the size of an egg. The bark was hollow and I cut it all off and killed six white worms. Can you tell me what further to do or what to put on the tree where I cut the bark away in order to save the tree? The new sprouts on the tree grew about eight inches this season. The tree was pale yellow last summer and I put old manure around it and it got a dark green color this year.—C. W. E., Kentucky.

YOUR peach tree is affected with borers. You should go over the tree in early spring and dig out the worms with a sharp knife, using pliable wire to shove down the burrow, thus killing them. Dig out the borers not later than June. Remove all gum from the wood and paint the wounds with pure white lead mixed with raw linseed oil. By mounding up the earth at the base of the tree to a height of one to one and a half feet will make the insect lay its eggs higher up on the trunk, hence it will be easier to cut them out. The earth should be mounded up before June 1st and in early fall should be leveled down. Go over your trees again in the fall and cut out the borers. By constantly watching and cutting out the borers, they can be kept well under control.

The use of paradichlorobenzine has come into wide use during the last few years for the control of peach tree borers, and it is quite effective. If you will write to the Department of Agriculture at Washington, D. C., they will send you bulletins on the use of this material.

Pruning Pear Trees

Would like some information on pruning pears, especially when pruning old trees.—C. C. D., New York.

THE pruning of young pear trees is very similar to the pruning of apple trees. The general tendency among horticultural authorities and orchardists is to do less pruning now than was formerly done. The pruning should be more of a corrective or guiding nature, eliminating any cross limbs or correcting bad crotches, but not pruning back as heavily as has formerly been done.

In pruning old pear trees, it is advisable to thin out more or less of the branches and head back moderately. However, do not "dehorn" the trees because these extremely severe prunings of old trees, will throw them out of balance and will tend to make them produce large numbers of water-sprouts and may throw the trees out of bearing for several years.

Two thousand acres are to be planted to Black Mission figs by the J. C. Forkner Fig Gardens at Fresno, Calif. The fruit from this orchard will supply a considerable tonnage of early figs for shipment during the month of June.

Ozark Grape Growers Aroused

By D. E. Eicher, Missouri

THROUGH the horticultural department of the Frisco railway, in connection with representatives of the Welch Grape Juice Company, in cooperation with the extension forces of the University of Arkansas and the Missouri Fruit Experiment Station; a series of meetings is being held throughout the Ozark territory at the present time with a view of stimulating the commercial planting of grapes. As readers of AMERICAN FRUIT GROWER are no doubt aware, the Welch Grape Juice Co. of Westfield, N. Y., having decided to locate a grape juice plant at some point in the middle west, sent their representatives throughout various states in this region, with a view of selecting a location where the Concord grape could be grown commercially to best advantage, and finally selected the Ozark territory as the ideal location for this purpose. A site for the $300,000 plant has been located at Springdale, Arkansas, and something like 1500 acres of grapes have already been planted in this immediate vicinity. To properly take care of this factory, however, and to provide for the growing demand in leading markets of the United States for Ozark grown grapes, it will be necessary to materially increase this acreage and it is estimated that there will be between 10,000 and 15,000 acres planted in grapes in the Ozark territory of Missouri and Arkansas within the next three years.

The commercial growing of grapes in this territory is a new industry, generally speaking, although it has been demonstrated through the Italian colony at Tontitown, Ark., that the soil and climatic conditions in this section are particularly adapted to this product. The Italian colonists in this territory have made the growing of grapes a very profitable industry. While the crop was extremely short during the past season, the average price, per ton, secured by these Italian grape growers was over $175. While this was an unusually high price, grapes grown in this territory in a small way, have always sold at the highest market price, due to the fact that they are ready for the market at a time when grapes in northern sections have not as yet matured.

Grape growing in the Ozark territory has also been tried out, in a small way commercially, at Knobview, Mo., in Pulaski County, and also in the vicinity of Neosho, Mo.

Growers Will Organize

In connection with the meetings now being held in the Ozark territory with a view of stimulating commercial grape growing, it is necessary to give the prospective grape grower complete information with reference to the kind of roots to secure, the preparation of the soil, methods of planting, cultivation, fertilization, pruning, spraying, etc. Local organizations will be formed in each of the communities where commercial acreage is planted with a view of assisting in the proper marketing of the grapes when same are ready for harvest.

While the Welch Grape Juice plant at Springdale, Ark., will establish a ready market for large quantity of grapes grown in this territory, it is more than likely that the outside consuming markets at that time will be in a position to pay even higher prices and that a very large percentage of the grapes to be grown in this territory will be shipped to consuming markets at harvest time.

It is predicted by experienced grape growers from New York and Michigan districts, where most of the available grape land is either already in vineyard, or rapidly being utilized for this purpose, that the Ozark teritory of Arkansas and Missouri offers unlimited opportunities for this field, and that this immediate section will eventually become the center of the grape industry of the United States.

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EVERY year you put off building a fruit storage cellar you are helping to pay the cost of some other fellow's big city storehouse.

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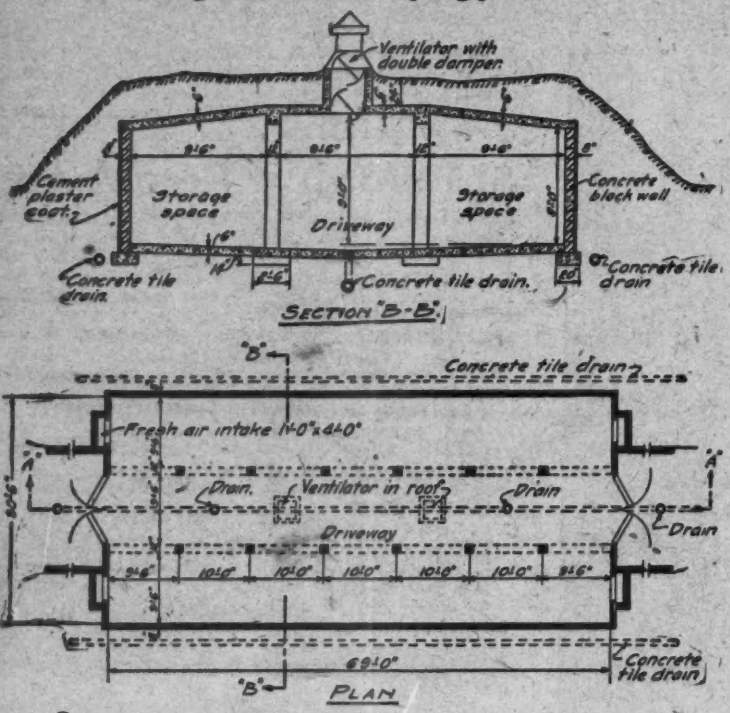
Spring fruit prices average much higher than fall prices when markets are glutted. The grower with home storage facilities takes spring profits.



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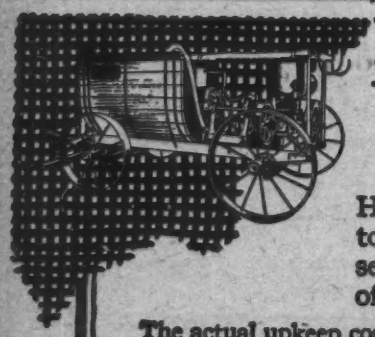

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Hardie Sprayers operate at low cost today. And they run dependably season after season at a minimum of cost for upkeep and repairs.

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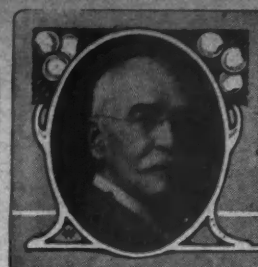

Charles A. Green's Walks and Talks With Readers

Value of Bearing Trees

A FRIEND in Indiana writes me that her orchard has been entirely destroyed by fire from a railroad and asks me to assist her in valuing the burned fruit trees and bushes. She says all the fruit was excellent and the apple trees were bearing the finest fruit she ever saw.

C. A. Greene's Reply: The fruit trees and plants you planted about eleven years ago I would estimate worth as follows: apple trees $25 each, pear trees $15, plum, cherry and peach trees $10, grapevines $5 each if vigorous and bearing good grapes, other small fruit plants 75 cents, lilac bushes $2, rose bushes $1.

I make the above estimate, assuring you and all concerned that it is impossible for me or anybody else to give an exact valuation or something they have not seen. But even if one were to have seen these things growing before the fire it would then be difficult for me to estimate the loss. I might estimate the loss too great or not great enough. I am often called upon to make an estimate of the value of trees lost in some such way as yours and always feel embarrassed in my appraisal, realizing the difficulties.

Thomas Bell was the owner of a large plum and pear orchard about twenty years planted, which was partly destroyed by the barge canal which passed nearly through the center of this magnificent orchard. Mr. Bell says that the state of New York in its appraisement of injury done did not consider the trees at all further than to consider the land more valuable on account of the trees growing upon it.

Mr. Bell says that in the west and middle west they are settled upon the following plan of adjusting the loss of trees. If the trees are destroyed when one year old, the loss is figured at $1. If the trees have been growing two years, $2 are allowed for each tree destroyed, and so on. If Mr. Bell's loss had been figured in this way he would have received about $20 per tree for the trees had been growing twenty years.

Another Rochester firm's trees were damaged by the large pipes of the waterworks company passing through a pear orchard. The damage awarded this firm was $35 per tree for trees in full bearing that had been planted about twenty years.

Dream Grape Culture

BEING deeply interested in fruit growing, I often dream about starting vast orchards or berry fields. Many times I have dreamed of planting a ten acre field on the old farm homestead to black cap raspberries. On another large field I often find myself in my dream planting the blackberry and in the largest field of all I have been engaged in my dreams in planting what in eastern states would be considered a monumental orchard. Last night I dreamed about planting the grape. It is amusing how quickly I can plant things in my dreams and how soon the vines come into bearing after they are planted in my dreams.

Last night the grapevines grew amazingly, twining up around stout stakes, and in less time than it takes to tell the story these vines were producing beautiful clusters. If one loves the vineyard he can scarcely imagine greater pleasure in his dreams than comes actually to the man who has an abundance of grapes growing about his home garden or who has an acre or part of an acre devoted to grape growing.

In real life how quickly the grapevines begin to bear fruit. At the Green Fruit Farm last season the Caco grape bore the second season from planting. On my home lawn there is a telegraph pole that needed beautifying, therefore I trained a Niagara grapevine to the rough pole. Last season this little vine produced clusters of marvelous beauty, delighting my eyes continually as I passed that way. Unfortunately a big school boy discovered these grapes and when they were about to ripen picked every cluster without twinges of conscience.

Important Things

WHEN we are asked which are the most important things affecting life we are at a loss to answer. Leaves are not highly prized by the everyday man. We see them scurrying over the lawn propelled by the autumn winds. We see them gathered in piles in front of the shrubbery and in the woodlands. There are a few who study the leaves and see beauty in them. There are others, but not many, who appreciate the utility of leaves. Without leaves there could be no life on the earth. There would be no trees, no grass, no plants, no shrubs, no timber, and a large part of the beauty of the world would be obliterated.

Water is not only an essential and a convenience. Nature has wisely provided an ample supply of water. We who live upon the land cannot help fancying that the land predominates over the water, but when we look at the map we see that the oceans cover most of the earth and that continents and islands are simply projections brought about by some volcanic upheaval. How much more difficult it would be if there were less water and more land. As it now is we have what is equal to a railroad track covering and surrounding the earth, navigable at all seasons of the year and under no one man's control.

It is easy to see what the sun is doing for us. I do not wonder that many nations worship the sun and have worshipped the sun for thousands and thousands of years. No one has been able to specify particularly what the sun is composed of and how it is possible for it to go on throwing out heat in every direction for millions of years without losing much of its bulk or substance. Let the sun stop shining for a moment or an hour and this earth would be transformed immediately into a ball of frozen matter and all life become extinct.

Woodchucks

WOODCHUCKS are interesting creatures. Some people think they have information regarding the coming weather, which I much doubt. It is surprising how much damage a family of woodchucks may accomplish in one season. Some times a whole community of woodchucks will work on a bluff of the farm where they soon become pestiferous. Such was the case at Green's Fruit Farm. There was a high bluff which I thought well adapted to producing apples, therefore I planted it to apple trees. As fast as I planted the trees they were gnawed down by the woodchucks. I did not know previous to this that woodchucks gnawed trees or disturbed them particularly. Probably the numbers of wodchucks were so great they had to feed on the bark and the branches in order to survive.

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The Perfect Liniment
For External Use on
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It is astonishing how quickly Caustic Balsam relieves Stiffness and Lameness, Rheumatism, Neuralgia, Strains, Sprains, Lumbago, Backache, Sore Throat, Chest Cold, Stiff Joints, etc.

Serious results through Blood Poisoning are liable from scratches, cuts or wounds from rusty nails or other metal. This great remedy applied at once will prove a preventive, is a perfect antiseptic, soothes while it heals. *What it has done for others it will do for you.*

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No experience necessary. No capital needed. All you do is to take the orders. We deliver by Parcel Post, and do all collecting. Your commission paid same day your orders are booked. Get started at once. Work full time or spare time. Easy to get orders on account of two coats for the price of one. Big season now on. Send immediately for sample coat to wear and to show customers.
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American Historical Art Calendar in Rotogravure for 1922 will be given to each of our subscribers who will devote a few minutes of their time in boosting the American Fruit Grower.

All you have to do is call in person on your nearest neighbor and fruit grower, have him hand you $1.00 for a year's subscription to the American Fruit Grower and the calendar is yours. It must be a new subscription—not your own. Be sure and give both the name and address of the new subscriber and where the calendar is to be sent. Get that new reader today.

AMERICAN FRUIT GROWER,
Chicago, Ill.
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Winter Fruit Meetings

Secretaries of horticultural societies and other organizations of fruit growers are requested to advise us of their meeting places and dates for listing in this column, particularly for such meetings as may be of general interest.

December Meetings

Idaho State Horticultural Society, Nampa, Ida., in December or January. Date to be announced later. I. Lee Truax, Sec., Boise, Ida.

Missouri State Horticultural Society, Hannibal, Mo., December 1st to 3rd. H. S. Wayman, Sec., Princeton, Mo. There will be a joint session with the Mississippi Valley Apple Growers' Association.

Mississippi State Horticultural Society, Hattiesburg, Miss., December 6th to 8th. F. B. Richardson, Sec., Poplarville, Miss.

Washington State Horticultural Society, probably at Spokane on December 5th or 12th. Date to be announced later. M. L. Dean, Sec., Wenatchee, Wash.

American Pomological Society, Toledo, O., December 7th to 9th. R. B. Cruickshank, Sec., Columbus, Ohio.

Indiana State Horticultural Society, Indianapolis, Ind., December 13th to 15th. H. H. Swaim, Sec., Lafayette, Ind.

Minnesota State Horticultural Society, Minneapolis, Minn., December 13th to 16th together with Minnesota Crop Improvement Association and Potato Growers' Association, staging the Minnesota Crop Show. R. S. McIntosh, Sec., University Farm, St. Paul, Minn.

Illinois State Horticultural Society, Champaign, Ill., December 20th to 22nd. A. M. Augustine, Sec., Normal, Ill.

Kansas State Horticultural Society, Topeka, Kans., December 21st to 23rd. O. F. Whitney, Sec., Topeka, Kans.

January Meetings

Georgia State Horticultural Society, Semi-annual meeting at Athens, Ga., in January. Date to be announced.

Delaware State Horticultural Society, Baltimore, Md., January 10th to 12th in connection with the State Agricultural Society. S. B. Shaw, Sec., College Park, Md.

Virginia State Horticultural Society, Richmond, Va., January 10 to 13. W. P. Massey, Sec., Winchester, Va.

New York State Horticultural Society, Exposition Park, Richester, N. Y., January 11th to 13th. Roy P. McPherson, Sec., LeRoy, N. Y.

Ohio State Horticultural Society, Columbus, Ohio, January 31st to February 2nd, R. B. Cruikshank, Sec., Columbus, Ohio.

Montana Horticultural Society, Stevensville, Mont. Date to be announced. J. C. Wood, Sec., Missoula, Mont.

Sixth Annual Fig Institute, Fresno, Calif., January 13th and 14th.

February Meetings

Eastern meeting of New York State Horticultural Society, Poughkeepsie, February 22nd to 24th. Roy P. McPherson, Sec., Le Roy, N. Y.

National Tractor and Power Farming Show, Minneapolis, Minn., February 6th to 11th.

POMOLOGICAL SOCIETY AT TOLEDO

President L. H. Bailey, of the American Pomological Society has issued a proclamation calling for a meeting of the society at Toledo, Ohio, on December 7th to 9th. All friends of fruit growing are invited to attend this meeting and take part in the discussions. A very fine program has been arranged, and there will be a large exhibit of fruits and nuts from all parts of the United States and Canada.

There are 48 trees to an acre when set 30 feet apart each way.

GENUINE SPRAY HOSE THAT COSTS LESS

Copyright 1921, by The Goodyear Tire & Rubber Co.

WHEN you buy Goodyear Monterey Spray Hose you are sure of long, dependable service. And in the end it costs you much less than ordinary hose.

The tube of Goodyear Monterey Spray Hose is especially compounded to withstand the rotting action of the strongest spraying solutions.

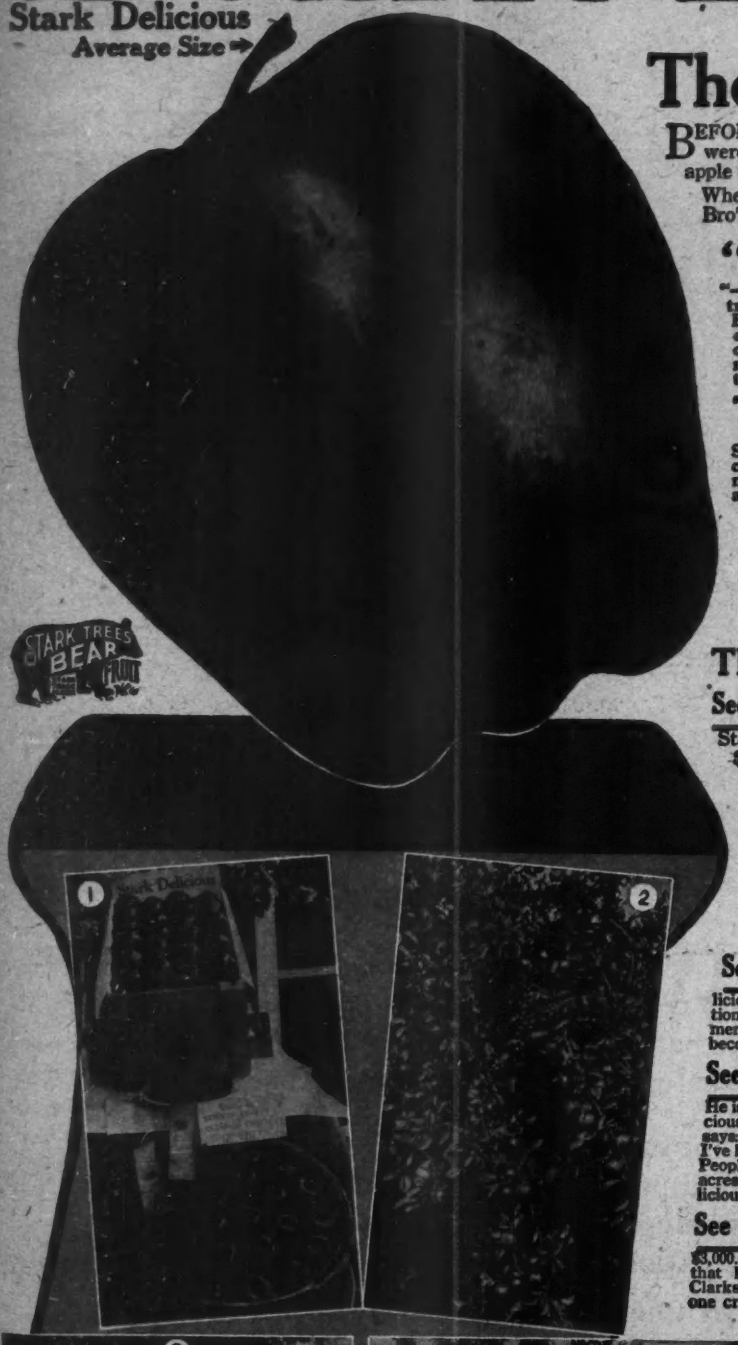
Its tough, resilient body holds the severest pressures and thus insures the solution breaking into a penetrating fog that thoroughly saturates the topmost branches. Its remarkably durable cover stubbornly resists abrasion.

Indeed, so strong is Goodyear Monterey Spray Hose, such a powerful pressure does it carry, that it is quite generally used even in the large municipal parks.

Ask your dealer for Goodyear Monterey Spray Hose. If he hasn't it in stock, write The Goodyear Tire & Rubber Company, Akron, Ohio, or Los Angeles, California.

GOODYEAR
SPRAY HOSE

Stark Trees Fruit



The Red and Yellow Apple Tea

BEFORE the genuine Stark Delicious tree and apple were grown, $500.00 to $1,000.00 per acre profits from apple trees were **unknown.**

When the late C. M. Stark, former president of Stark Bro's, discovered and introduced this "King of all Red Apples" nearly 30 years ago, he **knew** that in Stark Stark Bro's were giving to the world of fruit lovers growers the highest quality red apple that ever palate of man since Adam took his first apple-bite. It itself that—**and more.** The trees that bear genuine cious apples are the most amazing money-makers orchardists have ever planted—**this** is true this year,

"Stark Delicious Trees Would Be Cheap at $5 Eac

"—compared to so-called 'cheap' trees as a gift!" declared Houser & Sutton, owners of a 7,000-tree Stark Orchard near Newton, Ill. "Look! **Here** is a genuine Stark Delicious from Stark Bro's. It is only 15 mos. planted. Yet, look at this tree beside it, one of a block of 800 I bought from another nursery at so-called 'bargain' price and planted at the same time. See how weak and puny it is! Why, that **other** genuine Stark tree over there is one I planted **only** 3 mos. ago! And still, it is bigger, lustier, finer in every way than this 'cheap' tree planted 9 mos. before. That's why I say that a genuine Stark Delicious tree **would** be cheap even at $5.00 compared to these trees as a gift." **Houser & Sutton**

The True Strain of Stark Delicious Can Be Obtained Here O

Every Stark Delicious that you get from Stark Bro's contains the "blood" of the original Stark Delicious tree—which at more than 50 years of age is still bearing apple crops!

All the big horticultural authorities and shrewd orchardists praise and **plant only genuine** Stark Delicious trees. They **know** that every Stark Delicious tree shipped out by us is a true descendant of the original Stark Delicious tree, **which we alone control.**

The marvelous stamina, heavy and regular bearing the original tree, is the inher **the birthright of all the Stark trees we sell.**

Stark Delicious —

The Money-Making "Secret" of America's Success Orcha

See Photo No. 1 This is a photo of **genuine** Stark Delicious that won the $600.00 Prize at the Indiana Apple Show. They were raised by the Bedford Co. Orchards Co., who have 5,000 bearing trees in Pennsylvania. F. J. Heacock, Mgr. of the orchard, writes us: "I can sell easily all my Stark Delicious apples at **more than double the prices other apples bring.**"

See Photo No. 2 21 bushels (7 barrels) on one Stark Delicious tree at Geneva Experiment Station, N. Y. Proof of the Burbank statement, "the older the Stark Delicious tree becomes, the bigger and better the fruit."

See Photo No. 3 This is Mr. J. J. Bolender and his family, Chile, O. He is as proud of his genuine Stark Delicious trees as he is of his family. He says: "They are hardy and bear young. I've had them bear 1½ bushels at 6 years. People often buy our entire crop off 40 acres orchard just to get our Stark Delicious."

See Photo No. 4 $3,000.00 net is the money that Harry Carroll, near Clarksville, Mo., got from one crop from 11 acres of Stark Trees, just because he had Stark Delicious like those on this tree to sell.

See Photo No. 5 This genuine Stark Delicious tree and others like it in the Stark Tree orchards owned by American Fruit Growers, Inc., Pittsburgh, Pa. bore as high as 25 boxes per tree, selling in carload lots for almost $5.00 per bushel.

See Photo No. 6 A 6-yr. old genuine Stark Delicious tree bearing its 3rd successive crop in orchard of C. M. Fette, Marion County, Mo. Could you ask for better proof of young, heavy bearing ability?

See Photo No. 7 Photo from J. C. Adams, a fruit-grower near Vineland, N. J. "This year I had 7 year old trees bear 12 bushels!" he says. "My genuine Stark Delicious began to bear at 3 years and continue bearing heavily."

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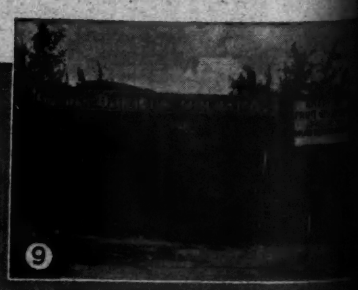
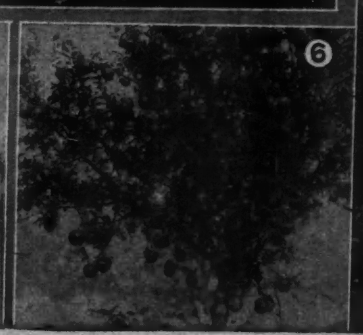
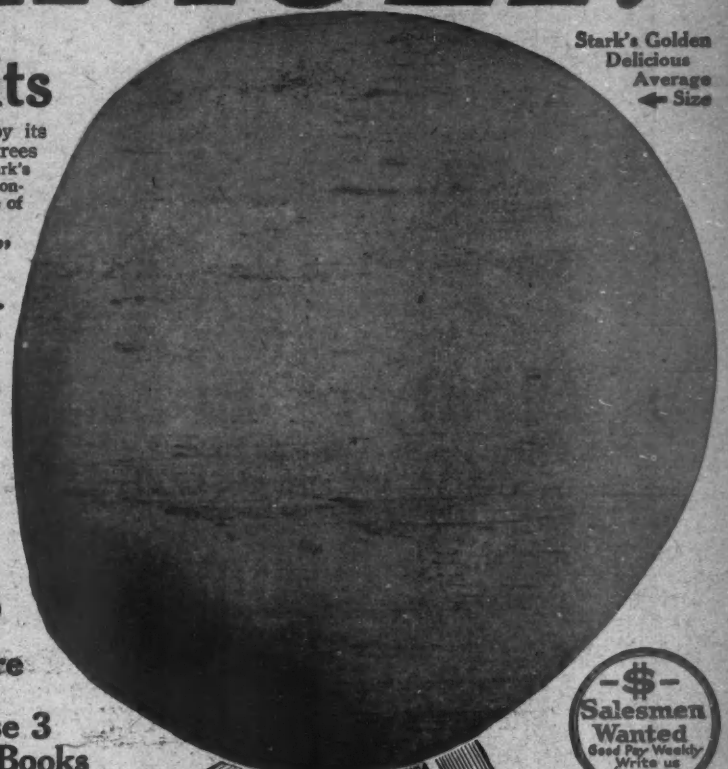




Fortunes in 1921!

That Pulls in the Highest Profits

Stark's Golden Delicious Average ← Size



HERE is the "Queen of All Yellow Apples"—Stark's Golden Delicious. Side by side with Stark's Delicious (red), it has been making a great name for itself.

It is the "$5,000.00 Yellow Apple" that is the sensation of appledom. Broke all records in 1920 by its ability to produce splendid crops of big apples on trees planted in 1918! Authentic reports showed 2-yr.-old Stark's Golden Delicious bearing in 28 different states—from Wisconsin to Louisiana and from New Jersey to California! One of America's best-posted fruit growers says:—

"Grandest Advance in line of Fruits Ever Made—Golden Delicious"

"I regard Stark's Golden Delicious as the grandest advance in the line of fruits that was ever made. Its favorable characteristics are vigor—so strong as to resist the check of remarkably young bearing. Size, shape and quality are also in its favor", says Mr. E. Riehl, Alton, Ill. . . . J. H. Gourley, Chief Ohio Agric. Exper. Station, Wooster, Ohio, writes:—"The behavior of Stark's Golden Delicious is phenomenal. Seldom does a variety have so many superior qualities."

See Photo No. 8 J. L. Webster is here shown standing beside a tree showing a wonderful crop of Stark's Golden Delicious apples. Mr. Webster got 65 per box for these golden apples. He was one of the first to see the advantage in growing a BIG, fine-golden apple for the top-price markets and he also knew what the long-keeping quality of Stark's Golden Delicious would mean to his pocketbook.

See Photo No. 9 This is the now famous "Golden Delicious Orchard". One enters this great orchard by passing under the sign shown in the photo—and then one sees why the multi-million company, The American Fruit Growers, Inc., bought this orchard that produces such an abundance of genuine Stark's Golden Delicious. It is one of the greatest profit-producing pieces of property in America.

See Photo No. 10 Silas Wilson, the noted Iowa-Idaho fruit grower, is shown in this photo standing beside one of his trees loaded down with Stark's Golden Delicious apples.

He says:—"Big Eastern apple buyers say that Stark's Golden Delicious is the finest, showiest apple they ever saw!"

Stark's Golden Delicious

The $5,000.00 *Yellow* Apple—A Sensation Everywhere

See Photo No. 11—Big Crop of Stark's Golden Delicious, Despite 3 Frosts and 2 Freezes

Photo No. 11 is especially interesting to the home or commercial fruit grower. It shows a wonderful crop of Stark's Golden Delicious on a tree in Co., Mo., tree. This was a worst spring for fruit in the memory of the oldest inhabitants. After an excessively warm March, which brought out all fruit trees in full bloom, we had 3 frosts and 2 freezes in early April. The remarkable three-time-blooming habit of Stark's Golden Delicious enabled it to dodge the frost damage—and it came through with its **sixth big successive crop in 7 years!**

These are the trees the home orchardist should plant if he wants to get apple crops quick—that the big grower should plant if he desires apple-crop profits quick.

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Just send us your name and address on the coupon—or a postcard.

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Three Profit Guide Books FREE

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...from $1.00 Worth of STARK as well—Get STARK SEED

South Hadley, Mass., reaped this big crop as a result of just $1 worth of STARK SEEDS in 1921.

...are tested for germination and true-to-name production. Write TODAY for a FREE Copy of the 1922 Catalog. Also ask for a FREE copy of our famous "Landscaping Plans" Portfolio—shows you FREE how to beautify home grounds at little expense.

...eries ...6 Years

...d Crop of Stark's Golden Delicious on ... Co., Mo., tree. (Read details above.)

Get SPECIAL NEW, LOWER 1922 PRICE ESTIMATE FREE on Trees You Need

Send COUPON TO-DAY

Get the 3 Big Books FREE

Send COUPON TODAY

1922 LOWER PRICE ESTIMATE—FREE

A. F. G.—12-21

STARK BRO'S, Box 289, Louisiana, Mo.

Please give me Special Lower Price Estimate on the following trees that I may want to plant this Spring:—

(Write before each variety the number of trees wanted.)

.....STARK DELICIOUS Apple	.....Liveland Raspberry Apple	.....Krummel October Peach
.....GOLDEN DELICIOUS Apple	.....Wilson Red June Apple	.....Montmorency Stark Cherry
.....JONATHAN Apple	.....Golden Nugget Pear	.....STARK GOLD Cherry
.....STAYMAN Winesap Apple	.....Lincoln Pear	.....Dyehouse Cherry
....."DOUBLE LIFE" Grimes	.....Keiffer Pear	.....MAMMOTH GOLD Plum
.....BLACK BEN Apple	.....Stark Early Elberta Peach	.....Omaha Plum
.....SENATOR Apple	.....J. H. Hale Peach	.....Gold Plum
.....Stark King David Apple	.....Red Bird Cling Peach	.....America Plum
.....Winesap Apple	.....Alton Peach	.....Flaming Giant Red Raspberry

Send me FREE copies of catalogs that I mark with X in square below

☐ 1922 "Prize Fruits" Tree Book—FREE ☐ 1922 Stark Seed Catalog—FREE

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Plenty of Potash

After all the years of Potash Hunger the opportunity has come to buy Potash at very low prices

IN order to take advantage of these low prices no time should be lost in telling your dealer what you will require so that there will be plenty of time to import the Potash.

The right kind and amount of fertilizer is a great help in reducing the cost of crop production.

A fertilizer high in Potash, 4 to 10 per cent, improves both the quantity and quality of all crops.

Great quantities of Potash have been removed from the soil in the past six years. Now is the time to restore it at small cost.

SOIL & CROP SERVICE, POTASH SYNDICATE
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POTASH PAYS

Apollo

Full weight— Galvanized— **Roofing Products**

In country or city—for farm buildings or residences, metal roofing is positively unequaled.

APOLLO-KEYSTONE Copper Steel Galvanized Sheets are the most durable, rust-resisting galvanized sheets manufactured. Actual weather tests have proved the superiority of this material for Roofing, Tanks, Culverts, etc. KEYSTONE COPPER STEEL is also unexcelled for Roofing Tin Plates. Look for the Keystone added below regular brands. Sold by leading dealers. Send for free "Better Buildings" booklet.

AMERICAN SHEET AND TIN PLATE COMPANY, Frick Bldg., Pittsburgh, Pa.

FRUIT PRODUCED THE WEALTH

That fruit is the greatest producer of wealth is very well illustrated in a bulletin recently issued by the Census Bureau regarding the fifty leading agricultural counties in the United States. The county taking first rank is the foremost fruit county in the United States—Los Angeles county, California, while in the list of fifty, twelve are conspicuous for the great tonnage of fruit that is produced.

The fifty leading agricultural counties were distributed among the several states as follows: California, 13; New York, 7; Illinois, 5; Texas, 4; Pennsylvania, 4; South Carolina, 4; North Carolina, 3; Washington, 2; Wisconsin, 2; and 1 each for Arizona Colorado, Connecticut, Maine, Minnesota, and Mississippi.

Rank of Some Individual Counties

Los Angeles County, Calif., ranked first among all counties in the United States in the combined value of crops and livestock products in 1919, the total value amounting to $71,579,899. The value of crops in this county was $61,864,479, which was greater than the combined value of crops and livestock products in any other county. Oranges contributed slightly more than one-third of the combined value of crops and livestock products in this county. Other important items were lemons, walnuts, and hay and forage.

Fresno County, Calif., ranked second among all counties, with a value of $55,110,101 for crops and livestock products, and stood third in the value of crops alone, with $51,861,252. Grapes made up a little more than one-half of the combined value of crops and livestock products, with peaches, and hay and forage following in order.

Aroostook County, Me., stood third in the combined value of crops and livestock products, with $54,376,256, and was second in value of crops, with $52,541,205. Potatoes comprised about four-fifths of the combined value in this county, while hay and forage was the next item in importance as regards value.

San Joaquin County, Calif., ranked fourth, with a combined value of $41,191,240 for crops and livestock products, and also stood fourth in the value of crops, with $37,956,866. Potatoes, grapes, barley, and hay and forage were the leading items from the standpoint of value.

Lancaster County, Pa., was fifth in rank, with $40,776,212 representing the value of crops and livestock products. Tobacco, corn, hay and forage, and wheat were the most important items, in the order named.

Yakami County, Wash., stood sixth in value of crop and livestock products, with $34,741,710. Apples, and hay and forage were the leading items as regards value.

Other counties, with their rank according to the combined value of crops and livestock products in 1919, were as follows: Tulare County, Calif., seventh, with $34,036,167; Snonoma County, Calif., eighth, with $32,300,623; Whitman County, Wash., ninth, with $31,921,047; and Dane County, Wis., tenth, with $29,895,753.

PUTS DROPS IN SOAPSUDS

Editor American Fruit Grower:

I have just read Mr. Snapp's article in the AMERICAN FRUIT GROWER on peaches in Georgia. I have a peach orchard and have for years been gathering the fallen peaches and dropping them in crocks or barrels of soapsuds placed at intervals through the orchard. Soapsuds are always available. Quick lime is not. I also find chickens, especially leghorns, excellent for keeping the ground loose under the trees and catching the larvae and pupae, especially if stable manure is placed around the trees occasionally.

HUGH EWING, Ohio.

The avocado was introduced into Florida in 1833 and into California in 1871.

Students of tropical pomology predict that avocado culture will some day become more important than citrus culture in the warmer parts of the United States.

1922 Deming Catalog Ready

"New Victory" Power Sprayer

The lightest and most compact power sprayer built for its capacity—only 7½ feet long overall. Develops 300 lbs. pressure, capacity 12 gallons per minute. 200 gallon tank. 5 H.P. air-cooled engine; friction clutch; chain drive; magneto; automobile type carburetor; automatic diaphragm pressure regulator.

The "Farmer's Friend"

A splendid, one-horse rig. Shafts and spray platform are hardwood. 50 gallon tank. Pump: Deming "Century". Will supply two leads of hose. 3-inch tired steel wheels. Easily converted into field crop sprayer at small extra cost by attaching a Deming 4 row field sprayer.

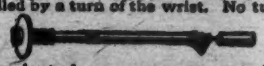
Wonderful value at the special price **$41.00**

"Samson" Complete Spraying Outfit

The easiest working hand-sprayer on the market. Develops 150 to 175 lbs. pressure, supplying two leads of hose. Unusually large air chamber allows operator to rest between strokes. Does speedy, thorough work.

The "Comet" Long Distance Spray Gun

A powerful all-brass gun that weighs only 2¾ lbs. All graduations from a wide-mist to a coarse long-distance spray controlled by a turn of the wrist. No turns



or angles to decrease pressure—a straight flow of solution from hose to gun. May be used with any power sprayer.

Special, $8.00

"Spraero Junior"

A handy little compressed-air hand-sprayer for the hundred and one little odd jobs of spraying hedges, flowers, berries, vines and disinfecting. Easily carried in one hand and operated by trigger control, it puts the spray right where you want it with no waste of spray mixture.

Complete details of the above sprayers and illustrations and description of 15 other hand and power spray rigs, and general spray supplies are found in the new 40 page catalog. Don't put off writing for your copy, do it now!

THE DEMING COMPANY
843 Depot St. Salem, Ohio

Deming HAND AND POWER PUMPS FOR ALL USES
SPRAYERS

Biffs and Boosts

Some Hot Shots, and a Few Bouquets From Subscribers—Let Us Have Yours

HERE is just a little peep into the mail bag of the Editors of AMERICAN FRUIT GROWER. It is comments such as the following that keep us continually "on our toes" in order that our reading columns may be filled with things of interest and value. We like to have such letters, and if you have not recently told us what you think of AMERICAN FRUIT GROWER, do so now. It does not matter what you think of the paper. Tell us. If you have any fault to find, be very sure to tell us all about it, as such comments enable us to make the paper of most general interest. If you like it, to tell us will make us feel g o o d of course. Read the following "Biffs and Boosts," and then let us have yours.

I don't want the AMERICAN FRUIT GROWER, and won't renew my subscription for the reason that I am not interested. The whole fruit business here in Pennsylvania seems to be in the hands of a syndicate, and the retail business in the hands of an unscrupulous lot of Jews and Italians so much so that when I want an apple to eat I have to pay not less than five cents for it. Why should I take a paper describing the business in California and other states when the price of their product when placed on my table is prohibitive? The only recourse here for the average working man is to do without. W. R. N., Pennsylvania.

I have been a reader of the AMERICAN FRUIT GROWER and its predecessors for about ten years, and find I cannot do without the paper, as I find so many good things in it. We have an orchard of 2,500 trees. W. M. M., Ohio.

I am not very s t r o n g for your AMERICAN FRUIT GROWER. It may be all right for other sections of the country, but it does not a p p l y to Minnesota. Our state may not be very much of an apple country, but it is coming to the front, and we need a good fruit paper here. There is little of interest in the AMERICAN FRUIT GROWER for the Minnesota orchardist, as I see it. Why not have some Minnesota authority as northwest editor, who could help us with our problems? J. P. W., Minnesota.

Your paper is certainly a valuable one for all who grow fruit. I have raised strawberries on a small scale for years, and am setting out 1,500 Cuthbert raspberries. It is always a pleasure to receive the AMERICAN FRUIT GROWER, and I never fail to find much valuable as well as interesting reading in it. A. D. B., Massachusetts.

I have taken your paper for a number of years, and am sorry to see that you have let the bars down to the advertisers of certain rupture cures. If you continue to acept advertising of this class, you may discontinue sending your paper to me. F. H. T., Illinois.

Your paper at one time was very helpful to the small grower of fruit, who was seeking information on what to grow and how to grow it. But you are evidently catering to the "big interests," and filling the paper with big scale fruit growing, motor trucks and tractors and other big things. Give us more articles on strawberry growing and things that will be of value to the man with only a half-acre. A. S. P., Michigan.

I think your paper is first class for the eastern grower, but I have noticed that much of the information in it for the past year is quite foreign to our methods of handling fruit in the irrigated sections. I feel that the little time I have to give to reading in magazines must be along lines similar to the methods we use here. M. S. S., Washington.

I do not care for the AMERICAN FRUIT GROWER, as it devotes too much space to the big growers and western people. M. J. C., Vermont.

Although I live in Pittsburgh, I have an orange grove in Florida and I have been very much pleased with the splendid articles you have had in your AMERICAN FRUIT GROWER about spraying citrus trees in Florida. You are exactly right. One of the greatest needs in that state today is more thorough spraying, and particularly more care in spraying for the rust mite. Give us more such articles as they are right to the point. G. H. M., Pennsylvania.

I wish you would print more articles in your paper telling how to cut out the middleman. Professor Sears' article in your July number about the farmer's market in some Massachusetts town was just fine. Can't you get some more good information like that and print it for the benefit of your subscribers. I think fruit growers should give more attention to establishing markets like that and cut out the middlemen. Co-operative marketing may be all right as they do it in California, but in this part of the country, where fruit growers are few and far between, we have to do differently. B. F. K., Vermont.

I think the AMERICAN FRUIT GROWER is a poor excuse for a fruit grower's paper. You spend too much time telling about the big co-operative associations in the west, and about the packing houses of the trusts. I would advise not so much space to telling the benefits of tractors and trucks. I know the manufacturers of these get profits big enough to let them use big space, but the average fruit grower is not interested in reading about such things so much as he is in how to grow fruit, how to control the bugs and mildew, and such things. J. D. C., Indiana.

Your AMERICAN FRUIT GROWER is the best publication of its kind that I have ever seen. It is clean, well printed, and its articles deal directly with the affairs commercial f r u i t growers are interested in. You undoubtedly have a difficult editorial problem to put something in every issue that will be of interest to fruit growers all over the United States. But it seems to me you are doing it, and doing it so well that you should have on your subscription list every commercial f r u i t g r o w e r in the United States, no matter where he lives or what kind of fruit he grows. I just want you to know that I thoroughly enjoy every issue of your paper. T. R. H., New York.

I notice that your November copy that just arrived looks like as if the cold weather shrunk it up, or perhaps it was the dry weather. Not much like the old Green's Fruit Grower of eight or ten years ago. I have been a reader of this paper for twelve years. —E. C., New York.

I have received several copies of your paper, AMERICAN FRUIT GROWER, and I find that it contains much helpful information, and I am interested in it, as I have an orchard.—J. J. J., Kentucky.

The AMERICAN FRUIT GROWER is certainly worth the price and many times more to those engaged in the production of fruit. My heart is with you in the efforts you are making to further the interests of the fruit growing industry of the United States. Keep swatting the humbug fruit juice practices until they are driven from the field of business.—H. C. B., Washington.

A powerful spray

—costs less than two cents a gallon

HALL'S NICOTINE SULPHATE is a contact poison, deadly to aphids, thrips and similar sucking insects. Being a vegetable extract it will not injure fruit or foliage.

Hall's Nicotine Sulphate is guaranteed to contain 40% pure nicotine. Due to this high concentration it is very easy to handle. One part Hall's to 800 to 1000 parts water makes a most effective spray. The cost of such a spray is less than *two cents* a gallon.

Half-pound tins, $1.00; 2-pound tins, $3.25; and 10-pound tins, $13.75.

Buy from your dealer. If he cannot supply you order direct from us.

For Greenhouses:—Hall's Nicotine Fumigator (12½% nicotine guaranteed) for fumigating, and Hall's Free Nicotine (40% nicotine guaranteed) for spraying or vaporizing.

Hall's Tobacco Dust
Finely ground and guaranteed to contain a full 1% nicotine.
100-pound sacks $4.50
2-pound drums .25

HALL'S
NICOTINE
INSECTICIDES
HALL TOBACCO CHEMICAL CO.
3955 Park Ave., St. Louis, Mo.

MYERS
SPRAY
PUMPS

The inestimable value of spraying has again been demonstrated this year While some localities report smaller crops of fruits and vegetables than usual, the quality has invariably been far above the average thus balancing the shortage in production.

This indicates that whether the yield be an abundant or small one there is always a ready sale for choice fruits—and choice fruits can no longer be grown without resorting to the protection afforded through spraying

MYERS SPRAY PUMPS, NOZZLES and ACCESSORIES have long been assisting fruit growers, farmers, gardeners and others in their fight against plant and tree enemies. Economical, practical, reliable and fully proven, with styles to meet all spraying requirements, no matter how large or small your orchard or vineyard, there is a guaranteed Myers Spray Pump that will exactly fit your needs, and the price will be as low or lower than many of the light weight, poorly constructed and cheaply equipped outfits now on the market.

Call on the Myers Dealer in your locality or write us direct when ready to purchase. Send for a copy of our late catalog today — It's free and a postal will bring it to your door.

FOR SPRAYING, PAINTING, WHITEWASHING AND DISINFECTING.

CATALOG FREE ON REQUEST

THE F.E.MYERS & BRO.CO.
150 ORANGE ST. ASHLAND, OHIO.

MANUFACTURERS OF PUMPS FOR EVERY PURPOSE
HAY UNLOADING TOOLS AND DOOR HANGERS

WILLYS-KNIGHT

The Utmost Value Money Can Buy

A fine car in appearance and service. Not a weak spot in it. And the greatest motor in the world.

Touring, f. o. b. Toledo

$1525

Roadster - $1475 Coupe - $2195 Sedan - $2395

After 100,000 miles its Sleeve-Valve Motor is running as smoothly as ever.

WILLYS - OVERLAND (Inc.)
TOLEDO, OHIO

American Historical Art Calendar in Rotogravure

Knowing that our readers will want at least one artistic calendar for 1922, we have made arrangements with a Chicago manufacturer to mail a beautiful Historical Calendar in rotogravure, to each of our subscribers who will devote just five minutes of their time in boosting the AMERICAN FRUIT GROWER.

It Teaches American History

In the American Historical Calendar the important events in the building of our nation are arranged in chronological order. Every day refers to an important event that took place on that date, the more important events being illustrated with reproductions of our famous historical paintings, beloved throughout the land.

The American Historical Art Calendar recounts actual deeds, illustrates events of our own history in pictures that were painted by our famous historical painters and is in itself the greatest collection of American historical art ever published. It contains the struggles, sacrifices and triumphs of our nation in the building and is a study of American History the equal of which no book can claim.

Description of Calendar

It has 14 pages, 12 of which are devoted to the twelve months. On the other two pages are reproduced the cover design with Gilbert Stuart's famous picture of Washington and on the last page is an exact replica of the original Declaration of Independence with signatures of all the signers. The calendar size is 9½x16 inches. The pages are bound together with metal holder and hung with brown cord.

CAN YOU SPARE FIVE MINUTES?

Phone or call in person on your nearest neighbor and fruit grower. Have him hand you $1.00 for a year's subscription to the AMERICAN FRUIT GROWER. Mail it to us with the name and address, and the calendar is yours. It must be a new subscription—not your own. Be sure and give us the name and address where the calendar is to be sent—no cost to you whatever—your order should be in the mail within thirty minutes. ADDRESS

AMERICAN FRUIT GROWER ... 190 N. State St., Chicago, Ill.

Fruit Committee Meets

The Fruit Committee appointed by J. R. Howard, president of the American Farm Bureau Federation, at its initial meeting in Atlanta, Ga., on November 19th effected an organization and appointed sub-committees for the intensive study of all problems connected with the marketing of fruit. Those present at this initial meeting were: James Nicol, Michigan; Samuel Adams, Editor AMERICAN FRUIT GROWER; W. B. Armstrong, Washington; Sheridan W. Baker, California; C. E. Durst, Illinois; J. S. Edwards, California; W. F. Farnsworth, Ohio; M. B. Goff, Wisconsin; Laurenz Greene, Indiana; Charles E. Hardy, New Hampshire; Orlando Harrison, Maryland; E. A. Ikenberry, Missouri; Clement B. Lewis, New Jersey; B. F. Moomaw, Virginia; N. R. Peet, New York; Gray Silver, West Virginia; C. E. Stewart, Florida; William H. Stites, Kentucky; Dr. O. E. Winberg, Alabama; R. B. Peters, California. James Nicol was elected chairman of the committee. J. S. Edwards was made vice-chairman and C. E. Durst was appointed as secretary-treasurer.

Sub-Committees Appointed

The sub-committees appointed to study intensively the problems confronting fruit growers are as follows:

•Executive Committee: James Nicol, Chairman, Samuel Adams, J. S. Edwards, C. E. Stewart, Orlando Harrison, Laurenz Greene, W. B. Armstrong.

Inter-Relations Committee: J. S. Edwards, C. E. Stewart, W. B. Armstrong, C. F. Lewis, C. E. Durst.

Legislative Committee: Orlando Harrison, Gray Silver, J. S. Edwards, Clement B. Lewis.

Publicity Committee: Samuel Adams, B. F. Moomaw, N. R. Peet.

Standardization Committee: W. F. Farnsworth, Laurenz Greene, William H. Stites, Chas. E. Hardy.

Transportation Committee: C. E. Stewart, W. B. Hunter, Dr. O. E. Winberg.

Finance Committee: W. B. Armstrong, Sheridan W. Baker, N. R. Peet, B. F. Moomaw, C. E. Stewart, E. A. Ikenberry.

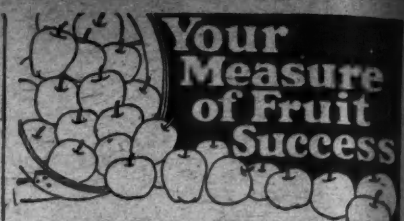
A meeting of representative fruit growers' organizations from all parts of the country will be called by Chairman Nicol in about sixty days to consider the reports of the various committees.

The American Farm Bureau Federation will establish a department of fruit marketing, and the director will work in conjunction to the sub-committee of the general Fruit Committee.

Some discussions coming up at the initial meeting brought forth some resolutions for immediate action. One of these had to do with fake fruit drinks and urges that legislation be passed, or the existing laws be administered in such ways as will prevent the sale of substitutes sold as fruit juices. A second resolution was adopted urging the passage by congress of the Vestal bill, known as the "standard container bill."

TO STUDY PEACH STOCKS

One of the largest collections of peach stocks to be found in the United States has been assembled and planted at the Texas Substation No. 2, located near Troup, according to the recent report from the Texas Experiment Station. This collection includes not only the many varieties found in the United States, but also many introduced from other parts of the world. This enterprise has been made possible because of a co-operative agreement with the Federal Bureau of Plant Industry and the Texas Experiment Station. The report states that the condition of the Texas peach industry is such that more or less irregularity in crops probably can be largely obviated either by finding better stocks, or varieties more able to evade conditions now causing great loss to the peach growers of the state.



Look Ahead a Few Years

OFFICIAL inspectors in some states will not let you plant nursery stock infected with injurious insects or such common diseases as crown-gall or hairy-root.

We welcome the most rigid official inspection and wish it applied in every state. Not all buyers know good trees and plants and many are attracted by low prices, oftentimes to their later disappointment and loss.

All our fruit trees are graded or sorted three times and by different men so that even if your purchase is not officially inspected you will receive only first class stock.

Send for Free Catalog "Better Fruit Trees." It will help you to judge good stock, also to select a good site and proper varieties, to plant right, etc.

Inside Facts of Profitable Fruit Growing

A customer who bought 765 trees says, "I simply used your Inside Facts and made good." Experienced horticulturists and growers testify "Good all-round book on fruit growing," "Teeming with helpful information," "Brief and to the point," "Send me 12 copies for each of my foremen in charge of my various orchards."

80 pages, price 10c
Free to customers

Yours for Growing Satisfaction

NEOSHO NURSERIES - CO
321 ASH ST.
NEOSHO, MO

SPRAY

GET BETTER FRUIT AND TIP-TOP PRICES

There is no market for knotty, gnarled fruit and wormy apples. Spray with the right material at the right time and give nature a chance to grow her finest. You will find just the spraying appliance you need in our famous line of

OSPRAYMO

High Power Sprayers

An Ospraymo Sprayer means a high-power sprayer, and high power is most important. You are sure to make your spraying job effective.

SENIOR LEADER
Gasoline Engine Orchard Sprayer

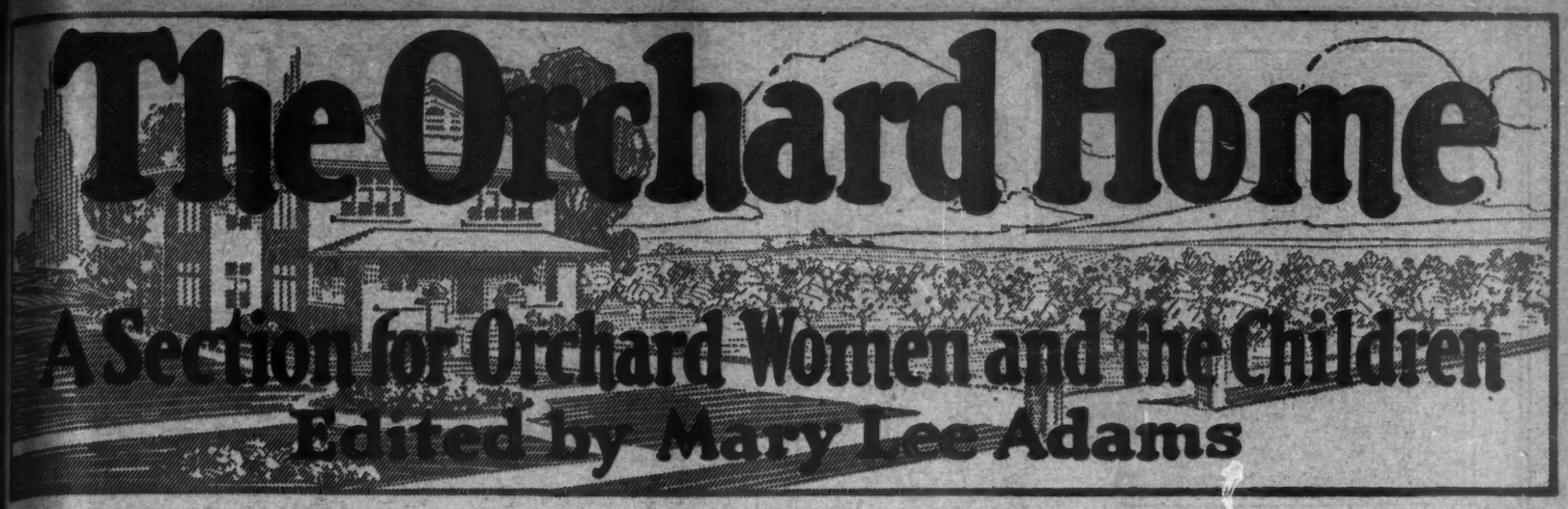
Above is a popular style of power sprayer for general orchard spraying. Investigate our mounted traction Red Jacket and Yellow Jacket Sprayers for beans, potatoes and vegetables. Also Barrel, Bucket, Knapsack and Hand Sprayers.

Send today for our latest catalog. Don't buy any sprayer until it comes. We have local dealers at many points, but write direct for catalog to the address below.

FIELD FORCE PUMP COMPANY
Dept. B Elmira, N. Y.
40 Years at Sprayer Building

Cooking Set. Blue gray enamel ware, heat proof, 6 pieces all full size, given for selling 40 pkgs. Garden Seed Seeds at 10c a packet. Send no money. Write today for seeds and catalog.
Lancaster Co. Seed Co.
Sta. 83 PARADISE, Pa.

Military finish, pin rifle. Sell 3 boxes Bamboo Rose mixed at 25c.
U. S. Supply Co. Box 87 Greenville, Pa.



A Happy Christmas

MANY purses are thinner than usual this season, but, though gifts be small and few, the best part of Christmas is still there for all—the happy assembling of relatives and friends, the kindly feling that never fails to well up in the heart, the warm hearth, the holly wreath, and the young faces glowing.

Christmas in the city may be a day of gladness but it never has just the same fine, homey joyousness of a country Christmas, when the snow crunches under the runners, or it may be under the rubber tires, and mistletoe and holly are gathered in the woods by laughing boys and girls, rather than purchased, flattened and berryless, from shops or peddlers.

Fruit for the Needy

THERE is an organization beloved by all, universally helpful, everlastingly active, who at this season turn their kindly thought to those needy ones who can have no hope for a Merry Christmas save through the efforts of the Volunteers of America. For 25 years they have given the poor a Christmas dinner. This is—so to speak—their silver anniversary. Let's help them celebrate by sending the dessert for the feast.

Need is greater this year than usual and there are from 40,000 to 50,000 poor families to be fed by the Volunteers led by General and Mrs. Ballington Booth. One who worked with them for long says that it is always very hard to secure fruit at Christmas on account of high holiday prices. Yet fruit certainly is the finishing touch to the feast, and the underfed child who can put an orange, banana or apple—not an "alley apple" such as he sometimes picks up to hurl after a "cop,"—but an honest-to-goodness orchard-grown apple, in his pocket to take home, is thereby made a happy soul.

You good orchard people—won't your Christmas dinner taste better if you know that some of your fruit has found its way to the tables that will give to many their only really satisfying meal of the year? At a recent farmer's meeting the phrase that made a deep impression was this—"The only place you can see a beam is on the face of the fruit grower." This shows how fortunate we are as a whole when compared to the general farmer.

The beam will grow brighter on your face if you make up a package, large or small, and send it to the nearest distributing center addressed to the Volunteers of America. Such centers are New York City; Boston, Mass.; Philadelphia, Pa.; St. Paul, Minn.; St. Louis, Mo.; New Orleans, La.; Des Moines, Ia.; Omaha, Neb.; Los Angeles, Cal.; Columbus, O.; Indianapolis, Ind.; Milwaukee, Wis; Portland, Ore.; Toledo, O.; Dallas, Tex. You can't live very far from some one of these places, and you may feel sure that your package, box or barrel of fruit will go where it will do the most good.

I think the children in our orchard homes would enjoy very much taking part in this gift. Perhaps each little one would contribute a few cents toward paying the freight on such packages. Remember—it is not necessary to prepay, but if you wish the gift to carry its full measure of joy, it will be doubly welcome if there are no transportation charges to be borne by the hard-pressed Volunteers.

Winter Time for Reading

SUMMER brings the cabbage worm, the corn ear worm, the tomato worm, and many another unwelcome worm to the garden, but winter brings the book worm to the hearth and home. Big worms, little worms, middle-sized worms gather round the fireside and the lamp. Even if the littlest worms are sometimes heartlessly alluded to as "pests," no one really wants to spray them with poison solution. Like the worms that eat up our vegetables, all these book worms need food if their minds are to be strong and vigorous.

"Everyone Reading and Reading for Everyone" is a good motto for the orchard home from one equinox to the next. A very excellent suggestion is that a certain sum be placed each week in a book-fund to be expended on the winter's supply of literature. One or two good magazines are a delight and almost a necessity, but nothing takes the place of books when selected wisely.

Happy is the neighborhood that has a circulating library in charge of a person who can sift the literary chaff from the wheat, and who realizes that what is acceptable and suitable to one, may not be best or best-liked by all. The interchange of books among neighbors is a source of supply often neglected. Careless borrowers are responsible for occasional reluctance to lend. One of our best authors shamelessly avers that he has books on his shelves which he would rather see the owner dead than return. This may be accepted as a pleasantry, but there is a hint of truth behind it. One who establishes the reputation of scrupulous care and prompt return of borrowed books, will find them cheerfully placed at his disposal.

Your Girl and Her Dress

THAT some girls dress too conspicuously and without regard to suitability, or even to decorum, no one is disposed to dispute, but I'd like to take the part of the young girl against those who criticise indiscriminately all that she regards as most modern and therefore most attractive in dress.

With most girls, if its new its desirable; with not a few elders, the fact that it is new lays it wide open to suspicion. It is so different from what they are accustomed to. Yet if we would be quite fair to our daughters, and obey the admonition of wise kindergartners that we should try to "think ourselves back" into the age of immature youth, we would have no difficulty in sympathizing with the girl's love of modish dress. And if we carried justice a little farther, we might find several points of advantage in the newer styles.

Girls of high school and early college age, desire passionately to conform to the dress standards of their fellows. If a middy blouse is "the thing," any girl would eagerly lay aside in its favor the expensive gown provided by parental indulgence. The mother who tries to sympathize so far as possible, with her daughter's ambitions in this respect, will find her influence far greater when she feels she really must take a stand against some peculiarly outrageous fad, than if she set herself against all that the girl inclines to wear.

Money Talks

SOMETIMES money talks so loud that the ears which incline to it are deaf to all else. Such money-mad persons are pitiful, but the least worldly-minded still realize that considerable thought must be given to money if we are to continue our earthly career in anything like peace and comfort.

There are no parents who do not wish for their small boys that they may do well in the world when they grow up, that they may be prosperous and have sufficient for all the necessities, many of the comforts and some luxuries. Even more they wish these things for their little daughters. They believe children should be taught the true value of money but still they hesitate to give them the only practical training within their power—that is, how to earn, save and spend money.

Wtihout money how can children learn how to earn, save or spend wisely? But alas! no one needs to be taught how to spend unwisely. Spending comes as naturally as desires. After a very few years of life there comes the desire for things that money will buy. Then the desire for money awakens. If the bright boy and girl can't get it in one place they will wish to try another. If they never have money of their own at home, the logical remedy, to their youthful minds, is to leave home.

Even quite small children can perform very useful offices about the farm. They can do things that the farmer would be willing to pay for if he could not get them done otherwise. To work and to earn are splendid lessons for children.

FRUIT FOG
Will Make You Money

Would you like to make more money from your orchard? Would you like finer fruit with fewer culls? Then write today for our booklet and learn about FRUIT FOG—the biggest development in fruit growing in ten years.

Hayes Power Sprayers develop a scientifically atomized Super Spray under high pressure which cannot be surpassed. This FRUIT FOG envelopes every twig, branch and leaf like a mist, works into microscopic niches, cracks and crevices, kills not only *outside* pests but also the millions of *hidden* pests which no ordinary coarse, low pressure spray can touch.

So amazing are the results which FRUIT FOG gives, so thorough is the Hayes Method of Spraying that it is adding fortunes to profits every year. It will do as much for you. Investigate before you buy.

BIG REDUCTION IN PRICES. Prices on all Hayes Power and Hand Sprayers have been cut to rock bottom. You make money and save money if you buy a Hayes. Service stations and repair parts within a few hours of every grower.

SEND TODAY FOR OUR FREE BOOKLET. Tell us what you want, how many trees you have, how old they are, and we will tell you which of the 50 styles of Hayes Sprayers will best serve you. We can save you money and make you money if you write at once.

Hayes Pump & Planter Company
Dept. 112, GALVA, ILLINOIS.

Hayes Hand Barrel Spray Pump

Hayes Platform Duplex Hand Sprayer

Hayes High Pressure Triplex Power Sprayer

HAYES Fruit-Fog Sprayers

The Afgco Cook Book
by Beatrice Holmes

Oyster Soup

2 quarts oysters	2 eggyolks
1 pint milk	1 tablespoon butter
½ tablespoon flour	Salt and pepper

Scald two quarts of oysters in their own liquor, saving out a little of the liquor. Add immediately one pint of milk and bring to a boil. Ladle out the oysters and set them aside while the soup is being cooked. To do this, first beat the yolks of two eggs thoroughly and mix well with one tablespoon of butter and one-half tablespoon of flour. Add to this gradually a little hot oyster liquor and stir the mixture rapidly into the soup. Season with pepper and salt or celery salt. A bit of onion and mace may be added if liked.

Potato Rolls

3 cups hot mashed potato	Flour
1 tablespoon fat	1 cup milk
1 tablespoon sugar	1 yeast cake
	1 egg
	Salt

Add the fat, sugar and salt to the hot potatoes. When cool add the egg and the milk in which the yeast cake has been dissolved. Beat well and add enough flour to make a stiff dough. Let rise until light, put on floured board and roll into a sheet one-half inch thick. Cut with biscuit cutter, brush with melted fat, fold like a Parker House roll. Let rise in pan and bake.

Apple Omelette

8 large tart apples	4 eggs
1 cup sugar	1 tablespoon butter
Cinnamon	Spices

Stew apples until soft enough to mash readily without lumps. Add butter and sugar. Set aside to cool. Beat eggs well and add to cooled apple mixture. Season with cinnamon and other spices and bake until brown in shallow baking dish or pie pans. With roast pork or spare ribs, this is a delicacy worth sampling.

Pineapple and Marshmallow Salad

2 cups pineapple	¼ lb. marshmallow
½ cup cream	

Cut fresh or canned pineapple in small cubes. To two cups of pineapple use the entire quantity of marshmallow dressing given in the recipe. Combine at the last minute and serve with a maraschino cherry on top. Oranges may be used in place of the pineapple.

Marshmallow Dressing

Cut one quarter pound marshmallows in small cubes. Place the cubes in ¾ cup of cream (whipped). Let stand one hour in a cool place. Good with all fruit salads.

Apple and Raisin Pie

1 qt. apples	½ cup sugar
1 cup raisins	¼ teaspoon cloves
½ teaspoon cinnamon	Spices as desired

Wash, pare, core and cut the apples into eighths. Cook in a small amount of water, as you would apple sauce, until almost tender. Add spices and mix well. Add raisins and sugar. Cook until apples are thoroughly done and stir until they are mashed fine. Place in crust and bake.

Pie Crust

1½ cups flour	½ cup lard
½ teaspoon salt	Cold water

Sift flour and salt together. Rub or cut in fat, add cold water slowly until all the flour is moistened. Toss on a floured board and roll to desired thickness. A little lard dotted over the upper crust just before putting in the oven will give a flaky look. This recipe will make crust for two pies.

The HOUSEKEEPERS EXCHANGE
by Edith Randolph

A sick person who must be left alone at times, frequently feels a sense of loneliness which can be greatly lessened by placing a time piece in sight. Put a watch under a tumbler near the bed. This will give relief from the ticking which is often very trying to sensitive nerves.—M. A. F., Massachusetts.

A thin coating of vaseline covered by a thick coating of talcum powder, is excellent for a burn. Talcum powder will not form a sticky mass like flour, and is easily flaked off after the fire is out of the burn.—L. E. G., Florida.

If you are to be away from home for a few days, try this plan for keeping pot plants damp. Take a wash tub and place in it as many bricks as you have pots of plants. Nearly cover the bricks with water and place the pots upon them. The bricks will absorb the moisture and keep the plants in good condition.—A. E. H., Tennessee.

When heavy trunks or boxes are to be moved, place a piece of broomstick a little longer than the width of the trunk under one end. Lift the other end slightly from the floor and the trunk will move easily on this improvised roller.—C. S., Georgia.

If you wish to mend a soiled or torn spot in wall paper, do not cut a patch to match off of the roll of the same pattern, but tear off a sufficiently large piece and paste it over the place, taking care to fit the pattern. This will show far less than if the edges were cut square.—F. H., New York.

To prevent a ring forming around a spot cleaned with gasoline, add a pinch of salt to the gasoline and there will be no mark left after rubbing out the spot.—I. G. B., Connecticut.

A cheap new dust pan makes a splendid pie lifter for taking pies from the oven. Once used—always used.—N. I. M., Virginia.

In canning fruit or vegetables, if you are a little doubtful as to lid being air tight, run a little melted paraffin around the edge of the lid, or while the jar is still hot cold paraffin may be rubbed thoroughly over the edge of lid and rubber.—J. T., Pennsylvania.

An ordinary new dish mop, saturater with cedar oil as for a floor mop and allowed to dry, will gather all dust from corners and crevices of furniture.—F. H. G., New York.

To procure an even rim of white when making deviled eggs, gently stir the water in which the eggs are boiling for the first five minutes. This allows the white to set in an even rim and adds greatly to the appearance of the dish.—F. M. S., Illinois.

For a wood box, take any well made box of the size that suits you. Nail a block of wood about two inches square and half an inch thick at each corner of the bottom on the outside. Bore a small hole and set an ordinary caster in each block. Such a box can be easily moved when you wish to sweep or scrub and it can be pushed to the door, filled with wood and pushed back again.—T. G. B., Oregon.

To peel boiled eggs most easily, break the shell over the air space in one end and place the eggs in cold water about two minutes.—L. M. R., Illinois.

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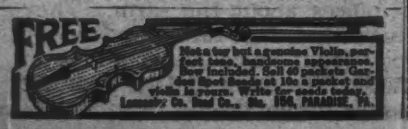
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The Son of Wallingford

By GEORGE RANDOLPH CHESTER
and LILLIAN E. CHESTER

Young Jimmy Wallingford with "Toad" Jessup narrowly escapes running over a flock of geese. Pretty Mary Curtis laughs at them, and from that moment Fawnlake City becomes to Jimmy the most desirable place in the world to locate. Dusk finds them still talking to Tal Curtis, Mary's hospitable father; but in leave-taking, as he is about to give his name, Jimmy poignantly recalls the scene in the Wallingford library that is the cause of his leaving home. J. Rufus had angrily exploded: "I am not satisfied with you, Jimmy!"

"I AM not satisfied with you, Jimmy," J. Rufus had repeated, clearing his throat over and over. There was a huskiness in it which had never come to him in his most critical commercial moments when failure might attend the slightest wavering of his voice. "I have given you every advantage. I have supplied you money without stint, and I have frequently tried to encourage your ambition along whatever line you might choose. You do not seem to have shown an interest in anything except the idle pursuits of a rich man's son—and your trick today in acquiring my new car was little short of a swindle! When I said you might have the car which stood in front of the porch, I thought it was the blue runabout which I had just left there. I did not suspect that you had sneaked into its place my new $25,000 imported racer." In spite of the tenseness of the situation, the family smiled, and Toad Jessup snorted, but there was no smile on the face of Jimmy, no smile on the face of his father as the latter went on: "I must confess that your ethical and moral bents are such as to cause me great uneasiness; since it has been the dream of my life that my son should occupy an honored and respected place in the world!"

There was another silence, in which the only audible sound was the rasping of Toad's stiff hair as he brushed it back from his forehead over and over. When the voice of Jimmy replied, it was quiet, clear, even gentle, and unmarred by any huskiness or waver whatsoever.

"Quite so," he said, rising and standing very straight, and still he had never removed his eyes from his father! "It seems to me, father, that if you had wanted your son to become an honored and respected citizen, you began about one generation too late. We'll let that pass, however. Nothing which now exists between us can be altered by argument. But I have made up my mind to find out for myself what is in me. Your study of these books has been a constant reproach to me," and he picked up from the table and dropped again Lombroso's "Criminal Man," which opened, from much use, to the page about lobeless ears. "Moreover, only today a young medical student, a stranger to me—'Doc Blinkers,' the other fellows called him—warned me to watch out for my lobeless ear, lest I follow in the footsteps of my notorious father. So I am going away in the morning and see what will happen to me when I am thrown on my own resources, and not—" he paused for an instant, hesitated, then came that little straightening of the lips which had in it a slight suggestion of cruelty—"and not as the son of Get-Rich-Quick Wallingford!"

J. RUFUS took this blow motionlessly. His face had been white; now it seemed that a wave of extra pallor swept over it and hardened it. He might have been a marble statue, with his lack of blood and his lack of change in that set and rigid expression. The thumb of the fist on the table presently unfolded and clasped itself down against the under side of the table edge; then the color began to sweep back into his face, and he rose. Blackie, regarding his old partner with that keenness of intuition which had become absolute knowledge with the passing of the years, relaxed. Fannie rose when J. Rufus did, and was about to step between father and son when Violet Bonnie, herself as keen of intuition as any of these extraordinarily intuitive people, held Fannie by the arm.

J. Rufus paused a moment. There was a queer little jerk in hs knee, as if it had wanted to let him down again, then he walked over to his son and held out his hand.

"The best of luck, kid," he said, and that was all. The old familiar smile wreathed again his round countenance, and Jimmy looked into a pair of small bright eyes which twinkled jovially—and clearly as they could. Whatever of stiffness there had been in the boy melted instantly.

"Thanks, dad." A trace of a gulp in his voice as he held out his hand, and the two Wallingfords, father and son, stood there in a firm handclasp for a moment, still gazing steadily into each other's eyes; neither man, they were proud afterward to reflect, had weakened. * * *

Jimmy came out of his reverie abruptly. "Wall is the name, James Wall; and this is my brother, Edward!"

The deed was done. The Wall brothers were definitely committed to their new names, not merely on hotel registers, as in the past week of touch-it-and-hop prospecting, but with real people who had a home and a porch and big trees out in front—as in Tarryville. To Toad Jessup the change of name meant very little, as did his memories of his one ancestor, his "old man," long since deceased and not much use when living. Indeed, Toad had only retained his original name because his two adopted fathers could not agree on a substitute, neither Wallingdaw nor Dawlingford seeming to quite fit the boy. With Jimmy the case was different. His family, he began to find, had meant a great deal to him, and he felt like a traitor; as if he were somehow setting up a life which other folk might share, and casting his own people out of it—forever!

Perhaps it was the dimness of the big lawn back there which made it like any other dim lawn one chose to remember, or perhaps it was the loneliness of having heard the front gate click behind Toad and himself; but at any rate Sweet Patootie, as she shot down toward the boulevard lights, contained a solid dead weight of homesickness which no soft purring could lighten. Or, perhaps again, it was telepathy, for on the big porch at Tarryville, some hundreds of miles away, at this very hour the "family" sat in the poignant silence of homesickness, while the cricket and tree toads accentuated the stillness with their strident notes, and the bullfrogs in some distant marsh croaked unceasingly.

IF A MAN were to enter business in Fawnlake City at, say, the age of twenty-four, and if he were diligent and patient, he could amass a big white house and a lawn, a decent bank account, and three or four children by, say the age of forty-four; but there was that in the blood of the son of Get-Rich-Quick Wallingford which refused to thrill at this comfortable prospect. In brief, a week of earnest investigation had shown conclusively to James Wall that the only glittering inducement offered by this town was Mary Curtis. This inducement he had studied under every possible circumstance; on portico, lawn and shaded hill; in Sweet Patootie; in a rowboat on the little lake, and afoot; by sunlight, twilight, electric light, starlight and moonlight; and he had found the inducement flawless. Man alive, he had to stay in Fawnlake City! So behold him, in his shirt sleeves in his room at the Hotel Splendide, entirely surrounded by statistics covering the business prospects of the town, better than the inhabitants thereof knew themselves, and thus Toad found him when he burst into the room with:

"Say! Jimmy! What do you think?" His pompadour quivered and his eyes snapped and his very freckles seemed to dance as he threw on the writing table a couple of grimy rocks. "There's oil on the Curtis farm!"

"OIL!" and in a high state of excitement Jimmy jumped to the door and closed it. "Who said so?"

"I say so! There's oil down there some place or the 100 per cent. mark I got in geology was a dang lie!"

"Then I'll say there's oil," agreed Jimmy. He picked up one of the rocks and dropped it and brushed off his finger tips, then he looked at Toad speculatively. "Have you told Tal about it?"

"Certainly not. I hit it straight up for here. I wouldn't tell anybody about anything till I'd seen you. Now listen, Jimmy. We have $800, and I'll bet we can make an arrangement with Tal to sink a well on his place and divide fifty-fifty."

"And if we don't strike oil we're broke," drawled Jimmy. Moving over to the window, he lounged against the jamb and looked out across the little park musingly. They were cleaning the lake. The sluice gates were open the full length of the dam, and a cataract was pouring through with a mighty roar. He watched the process curiously, as if that alone interested him. The water was lowering in the lake at a remarkable rate, and the one little motor boat which Fawnlake boasted was streaking it for the dam to avoid being left in the mud. Suddenly Jimmy turned from the window, and his eyes were narrowed and a smile was on his lips. But Toad was gone—down to the drug store for some chemicals to analyze those rocks.

JIMMY, still smiling, began to sort and bunch together certain of his statistics, the details of the one big possibility which he had discovered, but had not found any way to make himself a part of. He looked at himself in the mirror as he put his tabulations in his pocket and studied himself critically. The son of Get-Rich-Quick Wallingford was going after big game, and he wondered if his trigger finger would be steady when he sighted his buck. It

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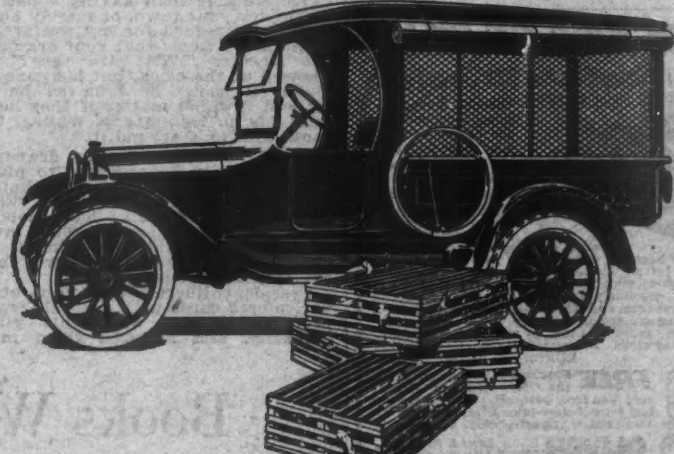

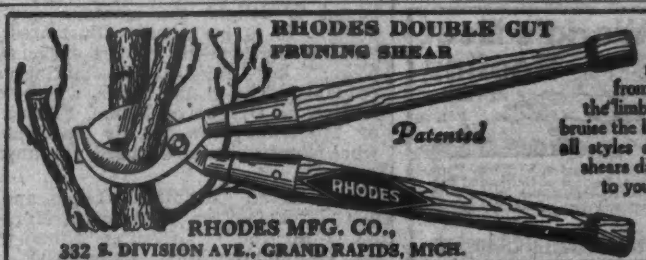

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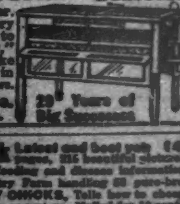
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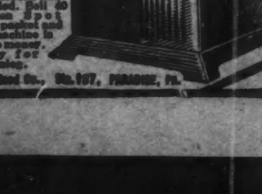

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had to be, dog-gone it! There was a Mary Curtis in the world. An hour later he was in Fillamore, forty miles away, and calling on the president of the A. I. and E. Railroad!

That gentleman was a mighty satisfied-looking party, large, solid, iron gray and sitting easily in his big chair without lolling. He surveyed his visitor with pleasure as he surveyed all things which were agreeable to gaze upon, and observed heartily while glancing at the clock: "Well, young man, speak up. My car will be down from the siding in thirty-five minutes."

"I'll try to hurry," said young James Wall pleasantly. "Mr. Burrowes, I've come to see you about running a branch line into Fawnlake City."

"It's a dead issue. Fawnlake City knocked at the door a long time ago, and we decided that the amount of business we'd get there wouldn't pay interest and depreciation on the cost of building the branch."

"Well," smiled Jimmy, "when a fellow wants to accomplish anything, he's got to start planning with the idea that the first answer will be 'no'; so now we're past that point."

MR. BURROWES laughed and looked at Jimmy with somewhat more of interest; nice-looking boy, clear-eyed, smooth-cheeked, healthy, bright, and snappy. He didn't look like Fawnlake City, however.

"Are you a committee of one from the Boosters Association back there, or what?"

"I'm a private interest," grinned Jimmy. "I may as well tell you that if your road should come through there, it will probably make me a lot of money."

"Good," laughed President Burrowes. "That's better than having a patriotic fervor for your town, or merely having a friendly regard for my welfare, because now I know that your arguments are sincere. What are they?" He glanced at the clock, but his gaze shot right on past. So long as he was amused it didn't matter if they had to hold his private car a while. They could run No. 4 around it.

"Well," went on Jimmy, drawing a long breath as he prepared to plunge, and producing a mass of pocket-size cardboard memorandum slips. "Fawnlake City's increase of bank deposits, of population, of commercial investment, of everything!" Jimmy was proud of this job. His own father couldn't have done better.

President Burrowes glanced at the varicolored cards with a highly trained professional eye, wiped his glasses carefully, and replaced them in his pocket, stuck a cigarette in a long holder, lit it, and smiled paternally at his eager young visitor.

"Looks good," he admitted, "but, young man, there's one thing you don't understand. I have a fine country place, I have a house here in town. I have apartments in New York. I have a yacht; all my children are married and doing well, and I go fishing two months in the year and hunting two months in the year. I own nearly the total stock in the A. I. and E. Railroad, and it earns dividends enough to let me do all these things which I have mentioned. I'm as placid and contented as a jellyfish in a warm pool, and, believe me, I have no dream of empire! If a man were to bring me control of the entire combined railroad systems of the United States, and tell me that he could make me own them and run them, I'd shoot him."

Ouch! The business expert of the Wall Brothers had not figured on this possibility, and for the first time he began to feel his youthful, self-confident assurance slipping. He began to feel that he had artificially braced himself to talk and act like, and to be, a regular business man instead of an amusing amateur, a precocious kid who could get a good laugh by asserting that he could lick the policeman on the corner! But even while this depression rose ferociously out of his heart, an equally ferocious retort rose to his lips:

"MAYBE you have no dream of empire, but you do want to keep what you have. I can tell you some news about an old-time competitor for your southern trade—the G. and W. railroad.

The G. and W.?" Mr. Burrowes picked up his cigarette again, took one puff, threw it away vigorously, and blew the smoke out of the holder. "What's new about the G. and W.?"

"I happened to learn the other day in the G. and W. station-master's office at Fawnlake City that there was talk of throwing that road into the hands of a receiver, which means new management. The controlling stock can be had for a song, and if you were to secure the G. and W. and run a branch through my town, making a junction between the A. I and E. and the G. and W.——"

He stopped abruptly because, quite as abruptly, President Burrowes had grabbed for the evening paper on his desk, looked at that day's stock quotations, and wheeled briskly.

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(To be continued)

Books Worth Reading

"The Complete Garden," by Albert D. Taylor. Doubleday, Page & Co., Garden City, N. Y. Price $6.00.

A vastly instructive book that is bound to delight the amateur gardener. It is beautifully illustrated, and has been called "Almost encyclopedic," but remains fascinatingly readable. The garden lover, whether he lives in Oregon or Maine, Florida or Minnesota, can readily find out what plants should be used for any purpose.

"The Home Beautiful—Landscape Gardening for an America More Beautiful." Greening Nursery Co., Monroe, Mich. Price $5.00.

When you see this book you will say "At Last!" It is what you have long wanted. A valuable volume, profusely illustrated and gotten up in very handsome style.

"The Master of Man," by Hall Cain. J. B. Lippincott Co., Philadelphia, Pa. Price $1.75.

One of the finest of the many excellent books by this famous novelist, whose scenes are laid in the Isle of Man. A stirring and lofty romance that has captivated the reading public.

"Dehydrating Foods," by Louise Andrea. Cornhill Publishing Co., Boston, Mass. Price $1.75.

Gives complete directions for successful dehydration of foods as well as for the cocking and serving of dehydrated products.

"Practical Programs for Women's Clubs," by Alice Hazen Cass. A. C. McClurg Co., Chicago, Ill.

This little book will serve to solve most of the problems that come up in women's clubs, and will insure to them a living interest and practical performance.

"Chamber Music," by James Joyce. Cornhill Publishing Co., Boston, Mass. Price $1.00.

The suggestive title is well chosen for a book of verse that seeks delicate interpretation and appeal rather than the blare of a brass band.

"The Beggar's Vision," by Brookes More. Cornhill Publishing Co., Boston, Mass. Price $2.00.

Those who have read the "Lover's Rosary" and "Songs of a Red Cross Nurse," will need no urging to secure this further expression of the genius of the author.

S. O. S. HELP HELP

Editor AMERICAN FRUIT GROWER:

As an advertising medium I'll back the AMERICAN FRUIT GROWER against all the other farm papers. That apparently innocent little notice in the "Orchard" pages let me in for such a flood of packages, books and papers that I am utterly unable to reply to all whom I thank most heartily and as for exchanging other books and magazines for them all, it is utterly impossible for it would break the U. S. Treasury to do so.

Please print a notice in BIG PRINT not to send any more for exchange, and no more religious papers and books for I'm not a heathen, and that all who wish some exchange in return please send me a card saying so. Many packages had the covers torn off or name of sender rubbed out or too blurred to read.

For one in my circumstances to try to answer all is utterly impossible. I said "write first" but the editorial blue pencil omitted it. The local Post Office is swamped and the clerks saying things. My mail for one day filled three two bushel grain bags and a salt sack!

All I can do is to thank the senders most heartily and hope for some way to earn money for stamps to thank those sending books only. Books ran from Jesse James to Christian Science. —Clifford E. Davis, Cumberland, Md.

American Grown Fruit Tree Stocks

Apple Seedlings, Straight or Branched. Also Pear Stocks from French and Japan Seed, Americana Plum, Mahaleb Cherry and Peach Seedlings in all Grades. Car Lots to Central Points.

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STRAWBERRY PLANTS
Standard Sorts and Everbearing
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Styles for the Month

SEASONABLE STYLES

3784. A Stylish Model.
Cut in sizes 16, 18 and 20 years. An 18-year size requires 5⅞ yards of 40-inch material. Duvetyn, serge, tricotine, velveteen, mohair and moire, poplin, linen, silk and crepe weaves are desirable.

3801-3793. A Variation of the Jumper Dress.
The guimpe, 3801, is cut in sizes 34, 36, 38, 40, 42, 44 and 46 inches bust measure. The dress, 3793, is cut in sizes 34, 36, 38, 40, 42, 44, 46 and 48 inches bust measure. To make this style for a 36-inch size requires 2⅝ yards of 36-inch material for the guimpe, and 3⅝ yards of 40-inch material for the dress.

3786. A Simple "Junior" Style.
Cut in sizes 12, 14 and 16 years. A 14 size will require 3¼ yards of 36-inch material. Gabardine, crepe weaves, prunella, hop sacking, twill, broad cloth, satin, serge and duvetyn will be good for this style.

3770. A Dainty Set for the Boudoir.
Cut in sizes small, medium and large. Cap No. 1 will require ¾ yard of 27-inch material; No. 2 will require ⅝ yard. One pair of slippers will require ⅞ yard for medium size. For caps, use lace, batiste, net, lawn, satin, cretonne or chintz. The slippers are attractive in silk, satin, cretonne, chintz, flannel or eiderdown.

3790. A Dress for Dolly.
Cut in sizes for dolls 16, 18, 20, 22 and 24 inches in length. The suit will require ⅝ yard of 36-inch material.

3822-3795-3838. A Combination of Comfort and Utility.
What could be more desirable for sports use or general wear? Comfortable knickers to which a simple blouse is joined, and over which a smart skirt is buttoned, topped by a jaunty jacket with a convertible collar, and neat pockets. The skirt may be finished with a button-closing in front, or only trimmed with buttons. Any blouse may be used with the knickers in place of the one attached and the knickers are good to wear with any skirt or one piece dress. Serge, velours, duvetyn or gabardine may be used for all models illustrated or, blouse and bloomers may be of silky satin or crepe, and skirt and jacket of wool or cloth, velvet or ratine. The skirt, 3795, is cut in seven sizes: 24, 26, 28, 30, 32, 34 and 36 inches waist measure. The width at the foot is 2 yards. The jacket, 3838, in seven sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. The knickers and blouse, 3822, in seven sizes, 34, 36, 38, 40, 42, 44 and 46 inches bust measure. To make this suit for a medium size will require 5 yards of 44-inch material for the skirt and jacket. The blouse will require 2¼ yards and the knickers 2⅝ yards of 36-inch material.

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Enclosed find ..... cents for which send me the following:

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Ask Us Now

This test will delight you

Again we offer, and urge you to accept, this new teeth-cleaning method.

Millions now employ it. Leading dentists, nearly all the world over, are urging its adoption. The results are visible in whiter teeth wherever you look today.

Bring them to your people.

The war on film

Dental science has declared a war on film. That is the cause of most tooth troubles. And brushing methods of the past did not effectively combat it.

Film is that viscous coat you feel. It clings to teeth, enters crevices and stays. Then night and day it may do serious damage.

Film absorbs stains, making the teeth look dingy. It is the basis of tartar. It holds food substance which ferments and forms acid. It holds the acid in contact with the teeth to cause decay.

Millions of germs breed in it. They, with tartar, are the chief cause of pyorrhea. Very few people have escaped the troubles caused by film.

Two film combatants

Now two combatants have been found. Many careful tests have proved their efficiency.

A new-day tooth paste has been created, and these two film combatants are embodied in it. The paste is called Pepsodent.

Now every time you brush your teeth you can fight those film-coats in these effective ways.

Also starch and acids

Another tooth enemy is starch. It also clings to teeth, and in fermenting it forms acids.

To fight it Nature puts a starch digestant in saliva. She also puts alkalis there to neutralize the acids.

Pepsodent multiplies the salivary flow. It multiplies the starch digestant in the saliva. It multiplies the alkalis. Thus these teeth protecting forces, twice a day, are much increased.

They must be done

These things must be done. Teeth with film or starch or acids are not white or clean or safe. You know yourself, no doubt, that old tooth-brushing methods are inadequate.

See what the new way does.

Make this pleasant ten-day test and watch your teeth improve.

A few days will tell

Send the coupon for a 10-Day Tube. Note how clean the teeth feel after using. Mark the absence of the viscous film. See how teeth whiten as the film-coats disappear.

Do this now. The effects will delight you and lead to constant delights. To all in your home they may bring new beauty, new protection for the teeth.

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The New-Day Dentifrice

The scientific film combatant, which brings five desired effects. Approved by modern authorities and now advised by leading dentists everywhere. All druggists supply the large tubes.

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SOLVE this puzzle, win Ford Auto votes free. The letters of the alphabet are numbered: A is 1, B is 2, and so on. The figures in the little squares to the left represent four words. (20 is the letter "T".) What are the four words? Can you work it out? If so, send your answer quick. Surely you want this fine, new Ford auto. Send no money. I have already given away many autos. You can own an auto.

SEND ANSWER TO-DAY

We not only give away this Ford auto, but hundreds of dollars in cash and scores of other valuable prizes. Bicycles, Guns, Watches, Talking Machines; something for everybody. Everyone who answers this can have a prize. There are no losers. Nothing difficult to do. Everybody wins. Someone gets this new, latest model Ford Auto free. Electric starter and lights. Do you want it? Write today and be first.

FORD WILLSON, 141 W. Ohio Street, Dept. 1000 Chicago, Ill.

Easy Now to Rid Your Farm of Rats

Wonderful Discovery by Noted Scientist Kills Every Rat Within a Week's Time—Not a Poison.

Rats cost farmers over two hundred millions of dollars a year, through the destruction of grain, poultry and buildings. Farmers need no longer suffer this loss because they can now kill off all the rats on their farm in less than a week's time. This is possible through the remarkable discovery of E. R. Alexander, a Kansas City chemist, who has perfected a virus which kills rats, mice and gophers as though by magic. This product is not a poison—it can be eaten by human beings or any animal on the farm as safely as their regular food, but means quick, sure death to rats.

This wonderful rat virus, which is known as Alexander Rat-Killer, is merely mixed with bread or meat scraps and placed where rats, mice or gophers can get to it. Within a few hours after a rat has eaten Alexander Rat-Killer he gets a high fever and suffers a terrible thirst. He leaves the barns and nesting holes and goes to the open fields in search of pure air and running water. Rats and mice affected always die away from the barns and houses, so there is no odor.

It is a scientific fact that one rat affects others and soon the whole colony leaves the buildings and dies. And though this virus is absolutely deadly to rats—chickens, hogs, cattle or any farm animal can eat it and not be affected at all.

So confident is Mr. Alexander that Alexander Rat-Killer will kill every rat on your farm in less than a week's time that he offers to send, as an introductory offer, a regular $2.00 tube for only $1.00. Give it according to directions, and if at the end of a week's time you are able to to discover any rats, mice or gophers on your farm, your money will be refunded. A big Kansas City bank guarantees that Mr. Alexander is reliable and will do as he says.

Send NO MONEY. Just write to E. R. Alexander, Alexander Laboratories, 264 Gateway Station, Kansas City, Mo., and the tube will be mailed at once. When it arrives, pay the postman only one dollar and postage on the guarantee that if not absolutely satisfactory your money will be returned without question. Write today—a postcard will do—and stop your rat losses now.

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Sure Rupture Comfort

Brooks' Appliance, the modern scientific invention, the wonderful new discovery that relieves rupture, will be sent on trial. No obnoxious springs or pads.

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Has automatic Air Cushions. Binds and draws the broken parts together as you would a broken limb. No salves. No lies. Durable, cheap. Sent on trial to prove it. Protected by U. S. patents. Catalog and measure blanks mailed free. Send name and address today.

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SKUNK We pay highest cash prices for all staple furs—Skunk, Mink, Muskrat, Raccoon, Red Fox, Fancy furs a specialty, including Silver and Cross Fox, Fisher, Marten, etc. Est. 1870. Our continued prompt returns and liberal policy are now bringing us shipments from all North America. Alaska to Mexico. Send for free Price List. Address **M. J. JEWETT & SONS, REDWOOD, N. Y., Dept. 42**

What and Why Is the Piston Ring?

WHEREVER power is produced by pressure exerted on a moving piston, whatever the type of engine, motor or compressor, its effectiveness is determined by the piston rings.

Upon the piston rings depends whether all of the force that is put into the cylinder—gasoline in the case of automobile motors, steam in steam engines, air in air compressors, etc.—is used to create power, or whether part of it escapes and is wasted. Upon the piston rings also depends control of cylinder lubrication; whether or not more oil than is needed to properly lubricate works up the cylinder walls to form carbon and, in gasoline engines, to foul spark plugs and make smoke.

All pistons are necessarily made slightly smaller than the cylinders in which they operate. They must be enough smaller so that when they become heated in service they will not bind in the cylinder.

Piston rings are light springy bands of cast iron that are fitted into grooves in the piston. It is their function to close and guard this space between the piston and cylinder; to spring out against the cylinder wall with a definite, firm contact, equal at all points of their circle, so that there can be no escape between piston and cylinder wall for the power that drives the piston. So that no excess lubricating oil can creep up the cylinder walls to make trouble. Upon the equality of their tension against the cylinder wall at all points depends not only the maintaining of compression and restraining of excess oil but also maintenance of round and true cylinders. Rings of imperfect tension, that bear more heavily at one point than another, mean unequal wear on the cylinder walls and out-of-round cylinders eventually.

Each ring should form a complete and concentric circle in perfect adjustment and conformity to the bore of the cylinder.

Not only is there waste of power where poorly fitting or worn rings permit gas to escape past them, but their gas condenses in the lower part of the cylinder, working then down into the crank case where it mixes with the lubricating oil. Gasoline is not a lubricant. It deteriorates the lubricating oil and the result is unnecessary wear in the motor because of ineffective lubricant.

Equal tension—uniform pressure outwards from the ring's center against the cylinder wall at every point of its circumference, is the basic requirement for a piston ring properly designed and made to develop and maintain maximum compression and maximum fuel economy. The weakness of any piston ring design that does not produce this equality of tension is easily seen. The pressure against the piston ring of the compressed gas in the cylinder is the same at all points of the ring's circumference. It is in no one place greater than it is in another. Therefore, it is obvious that a ring's pressure against the cylinder wall should be the same everywhere. If its tension or pressure against the cylinder wall is greater at one place than another, there is friction loss at the point of great pressure, which means loss of power, and possible gas leakage at the point of least pressure. Merely closing its expansion vent by flanges, or a locking device or stepping the joint does not prevent leakage past the ring which has not equal tension on the cylinder wall.

There is, however, one condition that develops in some gas engines which requires a specially designed piston ring, made specially for its correction. It is the control of excess lubricating oil, which has become such a problem to automobile engineers and repairmen, with the development of the modern overpowered automobile. These motors operate so much of the time under only partially open throttles with resultant high vacuums that they require, in many instances, a special oil ring installation; a ring designed ring installation; rings designed entirely to hold back excessive oil and which can be depended upon to insure proper compression and fuel economy.

Why a Drop Forging?

WHY do the greater part of the users of machinery, agricultural implements, automobiles, tractors, small tools, etc., prefer drop forgings for those parts that are subject to strain?

The main reason is that drop forgings save the breakdowns and loss of time that occur when castings are used. That good old excuse that "accidents are liable to happen in the best of machines" doesn't go any more. It has been revised to read—"accidents must not happen"—and drop forgings for all strain bearing parts are largely responsible for the reduced number of broken parts.

The manufacturer has gained wisdom through experience. He realizes that in the agricultural field there are probably more general tools and machinery sold than in any other branch of industry—for work and pleasure—and that a broken down machine is a costly affair, for the "snap" nearly always comes in the midst of the busy season when hours count and delays are dangerous to crops.

A drop forged part has had to withstand the "hammer treatment" from the time it was a piece of hot steel down through the dies where it was hammered into perfect shape, to the famous "heat treatment" and the finishing, with critical inspection at every step in the journey. It will therefore stand hard and rough treatment.

Some say that drop forgings are the chief factor of economy, as well as safety.

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BIG MONEY AND FAST SALES. EVERY OWNER buys gold initials for his auto. You charge $1.50, make $1.35. Ten orders daily easy. Write for particulars and free samples. American Monogram Co., Dept. 92, East Orange, N. J.

DETECTIVES EARN BIG MONEY. GREAT DEMAND. Travel. Experience unnecessary. Write, Dept. M1, American Detective System, 1968 Broadway, N. Y.

WE PAY $36 A WEEK AND EXPENSES AND GIVE a Ford Auto to men to introduce poultry and stock compounds. Imperial Co., D90, Parsons, Kan.

AGENTS $7 A DAY TAKING ORDERS FOR NEW Stove Transformer for home use. Substitutes kerosene for coal, and generates gas for cooking, baking and heating. Used year around. Sample furnished. Parker Mfg. Co., 305 Mat St., Dayton, Ohio.

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AGENTS—WE PAY $9 A DAY TAKING ORDERS for Insyde Tyres. Best and easiest seller ever put on the market. Guaranteed to give double tire mileage. Any tire. No punctures or blowouts. Every auto owner buys on account of low price. Enormous demand. Write quick for agency. American Accessories Co., B603, Cincinnati, Ohio.

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1000 ACRE STOCK FARM, ESTIMATED $100,000 expended; keep 100 cattle, cut 500 tons hay; 2,500 apple trees; three houses, modern improvements; six barns; steam heated dairy, poultry plant; platform scales; modern equipment; price $20,000. Details in catalogue, postpaid. Chapin Farm Agency, Boston.

120 ACRES—110 ACRES APPLES—(BEN DAVIS, Rome Beauty, Jonathan and Winesaps), scientifically cared for, balance tillable land; 4 room house; 2 barns; half mile good town 3000; on two railroads; southern Illinois. Federal loan, $4,800. Sacrifice at farm land price $200 per acre; $6,000 to $10,000 cash, balance to suit or trade. Address, H. E. Kent Farm Agency, Indianapolis, Indiana.

TEN YEARS TO PAY FOR CALIFORNIA FARM in Kings County, California, midway between Los Angeles and San Francisco, in San Joaquin Valley, 16th farming land can be obtained at only $175 an acre, under complete irrigation, small cash payment, ten years on balance. Non-residents can arrange to have land planted and cared for. These lands are recommended by Hanford Board of Trade and local bank. Twenty acres ample for man with few thousand dollars, if properly handled, will mean good income for average family. This proposition worth investigating. California State Land Settlement Board still has twenty-acre farms available in Merced County, on unusual terms. Full information on request. Why do so many persons long some day to make their home in California? Because nowhere else is to found such a combination of winterless climate, plenty of sunshine, seashore and mountains, fertile valleys, paved highways and very efficient marketing associations. All kinds of fruit, also vegetables, grains and alfalfa are commercially grown in California. Ask for illustrated folder describing San Joaquin Valley. The Santa Fe Railway has no land to sell, but will help you get rightly located. C. L. Seagraves, General Colonization Agent, Santa Fe Ry., 911 Railway Exchange, Chicago, Ill.

MISCELLANEOUS

A DEFINITE APPLE BARREL SUPPLY—KNOCKED down standard size apple barrels! Write immediately for free booklet fully illustrating the Hollingshead Gold Standard Shook. J. D. Hollingshead Co., (Coopers), LaSalle and Adams St., Chicago, Ill.

TOBACCO KENTUCKY'S NATURAL LEAF SMOKING 10 lbs. $1.75; Chewing 5 lbs. $1.50. Quality Guaranteed. Waldrop Brothers, Murray, Ky.

HONEY AND CHEESE OF SUPERIOR QUALITY packed in family size packages, write today for FREE price list. E. Rosa, Monroe, Wis.

ALL WOOL KNITTING YARN FOR SALE, DIRECT from manufacturer, at 75c, $1.25 and $1.50 a pound. Postage paid on five dollar orders. Write for samples. H. A. BARTLETT, Harmony, Maine.

ATTENTION—FRUIT AND POTATO GROWERS AND shippers. For sizes, sorters, carriers, elevators, packing house supplies, write to Fruit Appliance Co., Inc., Yakima, Washington.

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FORD COVER FOR CARBURETOR AND INTAKE pipe, patented. Adds 25 per cent more mileage and power. Put on any Ford motor in 2 minutes. Price $1.50. Special price in quantities. Air Friction Carburetor Co., 9100 Madison St., Dayton, Ohio.

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HUCKLEBERRIES—LARGE, SWEET DOMESTICATED clusters. Liberal package bearing plants, parcel post, $1. Educational Promoting Company, Warren, Penn.

FRUIT TREES REDUCED PRICES DIRECT TO planters. No agents. Peaches, apples, pears, plums, cherries, grapes, nuts, pecans, mulberries, berries. Ornamental trees, vines and shrubs. Free 48 page catalog. Tennessee Nursery Co., Box 101, Cleveland, Tenn.

FRUIT TREES, BEST PRICES, VARIETIES INCLUding double-worked Grimes. Locust Lawn Nurseries, Luray, Va.

FERTILIZER

NITRATE OF SODA: WIRE FOR SPECIAL CAR lot price delivered. Contract now for spring delivery at a big saving. Pay when goods arrive. Small orders wanted. S. H. Burton, General Sales Agent, Washington, Indiana.

PHOTO DEVELOPING

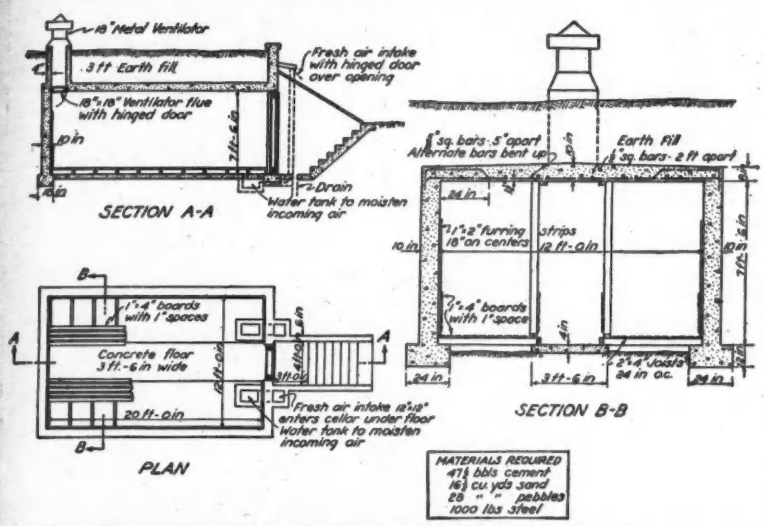
SAMPLE ENLARGEMENT, DIME, AND NEGATIVE returned). Roll developed and six prints, 25c. Brown Studio, Lake Elmo, Minn.

A Storage Cellar for All

By H. Colin Campbell, Ill.

THE hazards of fruit growing as a specialty are too well known by those who have long engaged in it to need discussion. But for that matter, every business has its hazards and it is the part of scientific business management to level these hazards as much as possible and in that way stabilize profits.

In the fruit growing industry, and particularly when engaged in it on a large commercial scale, proper storage facilities are absolutely necessary. To be compelled to market one's crop at the height of harvesting season merely because lacking suitable storage facilities, usually means great sacrifice of profits. With everyone throwing his crop on the market at the same time it is but natural that wholesale and retail prices should be lowered because in distributing centers there are not sufficient storage facilities to handle a total crop thus dumped on the market.



This design shows details of flat roof concrete storage cellar, also quantities of materials required for dimensions given. This structure may be increased in size by altering the length if the width remains constant, construction details and design under these circumstances being the same.

Speaking of refrigeration brings up the subject of commercial cold storage. Generally artificial cooling such as supplied by ice or refrigerating plants is a necessary adjunct of the large commercial storage structure. Only in this way can temperature control be assured, by dividing the building into as many rooms or apartments as may be necessary to provide for storage under different temperatures, temperature control in such case being a mechanical process.

As no fruit grower has the same storage requirements, only general suggestions and plans can be offered. The accompanying drawing shows a type of storage structure commonly called a small root or vegetable cellar. This plan permits of expansion by increasing size with respect to length, in other respects leaving the dimensions the same. It is designed with concrete as the exclusive or dominant construction material.

If possible to do so, a storage structure of this kind should be located at one side of a knoll or hillside so that at least a portion of the structure can be set in the ground and a large part, if not all, of the exposed wall surface banked with earth. Temperature control will be easier, particularly in air cooled storage as against mechanical refrigeration, if the roof of the structure can also be covered with two feet of earth as an insulation.

It is important that concrete be properly proportioned, mixed and placed in order to secure a weather-tight structure. There are occasions and conditions of construction where it is quite advisable to build storage structures of this type of hollow concrete blocks or to veneer the inside surface of monolithic construction with hollow block or tile so as to introduce insulation through the deal air space thus provided. In other words, the principle of construction is somewhat similar to that followed in modern icehouse construction.

In naturally cooled houses, manhole and cold intake covers are removed and cold air permitted to pass down into the cellar circulating in the passages provided. There may be times when it is necessary to force circulation of this kind by electrical fans. Bins when used are made of 2 by 4-inch joists covered by 1 by 4-inch boards nailed 1 inch apart. This applies to partitions as well as to floors.

Because of the fact that many storage structures are essentially in the form of underground buildings, a construction material must be used that is not subject to deterioration through contact with the earth. In other words, some type of masonry is to be preferred. And because the materials necessary for concrete construction are everywhere available and it meets in the highest degree the essential requirements of a fruit storage structure, practically all modern storage or refrigerator buildings are now built of that material applied in one of the several ways possible.

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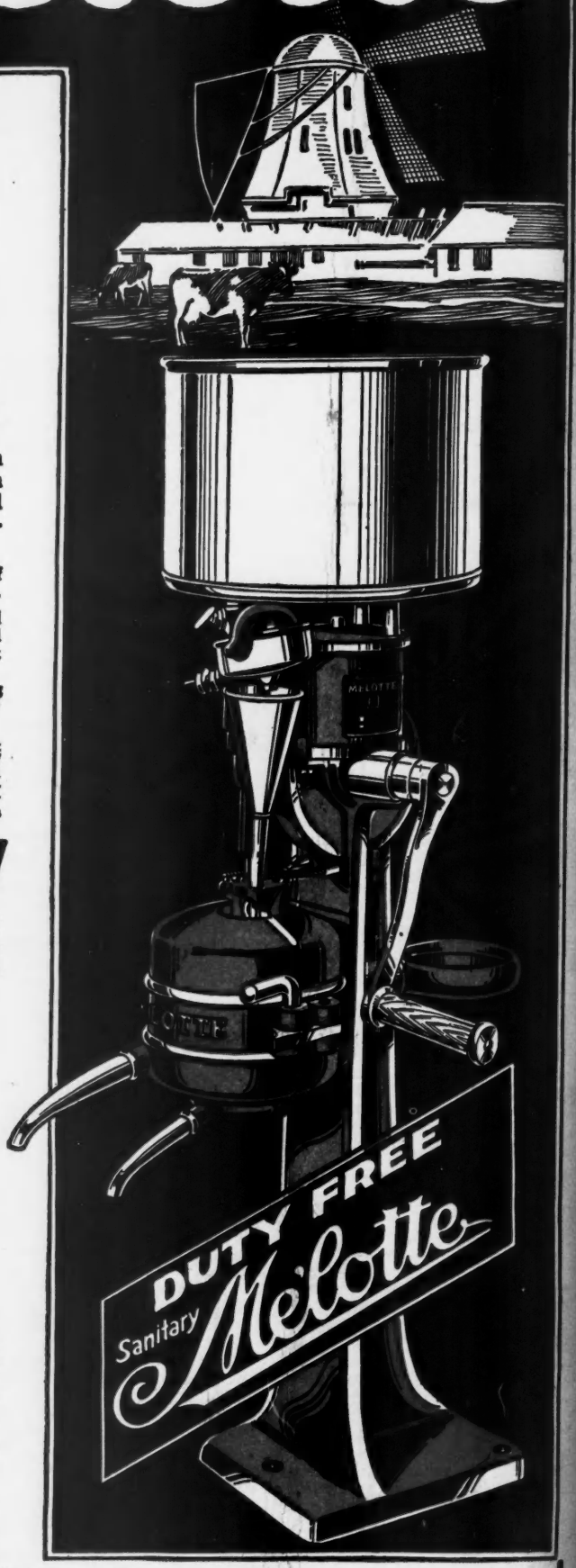

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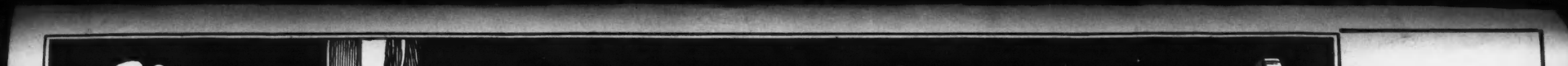
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